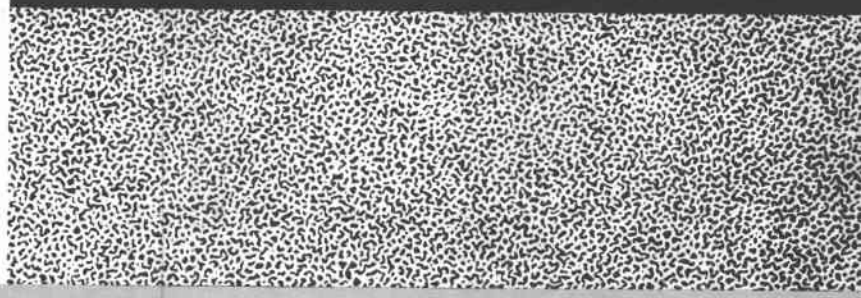
Hi 8

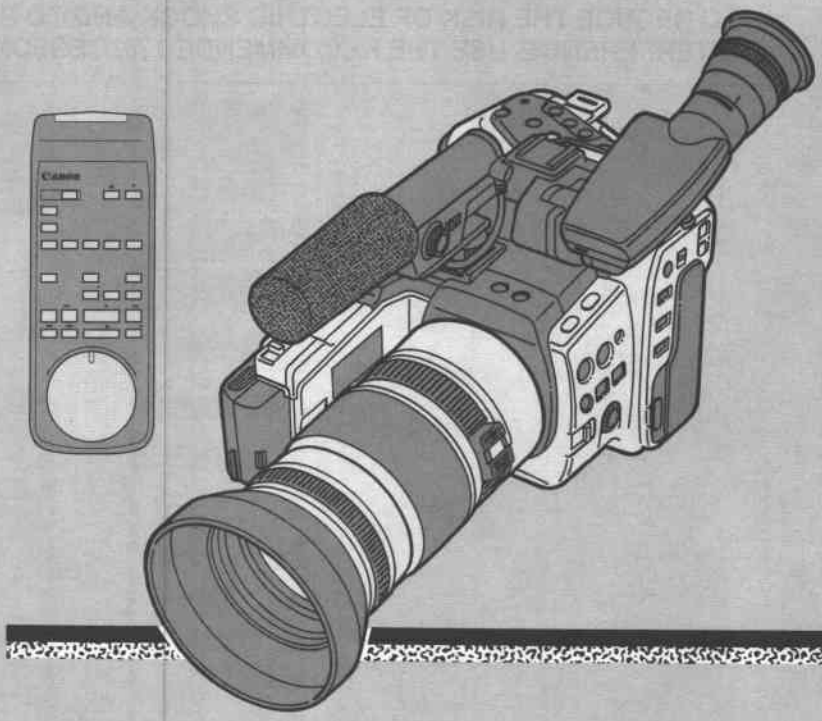
03/19-557

Canon EX2 Hi

8mm VIDEO CAMCORDER



Instruction Manual



E ENGLISH

This camcorder uses the VL Mount System. Any lens bearing the VL mark can be attached.

Important Usage Instructions

CAUTION:
TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

WARNING:
TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.

CAUTION:
TO REDUCE THE RISK OF ELECTRIC SHOCK AND TO REDUCE ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.

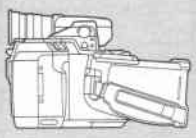
Introduction

First, we'd like to thank you for choosing the EX2Hi.

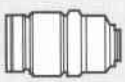
Whether you have selected it as the centrepiece of a professional Hi8 system, or whether you simply need better quality recordings than an ordinary camcorder provides, you can be sure of getting excellent results.

We suggest that you read this manual thoroughly and keep it for future reference. The EX2Hi is remarkably easy to use, but you will find this information useful if you want to make the most of its potential.

Check that this package contains the following items:

EX2Hi 	WL-1000 Wireless Controller 	Two AA batteries 	CA-100 Compact Power Adapter 	DC-100 DC Coupler 
BP-E718 Battery Pack 	Lithium battery 	Stereo/zoom microphone 	SF-200 Sports Finder 	SS-200 Shoulder Strap 
Body cap 	S-150 S-video Cable 	ST-150 Stereo Cable (Europe) 	PC-170ST Stereo SCART Cable (Europe) 	STV-150 Stereo Video Cable (Asia, Oceania) 

If you have the EX2Hi Lens Kit, these accessories should be included:

Zoom Lens CL 8-120 mm f/1.4-2.1 	Soft case 	Lens cap 	Dust cap 	Lens hood 

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Note:

- For standard 8 mm recording, P5 cassettes are recommended. Both E5 and P5 types are suitable for Hi8 recording.

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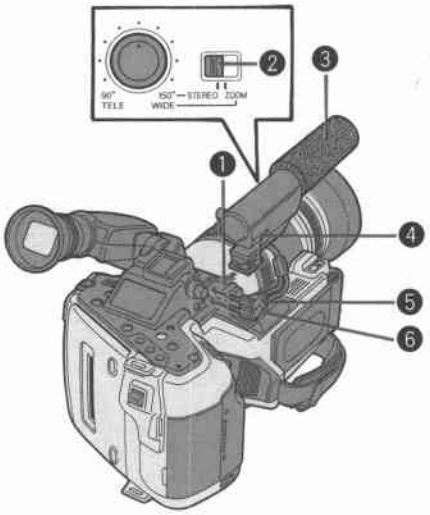
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Attaching Stereo/Zoom Microphone

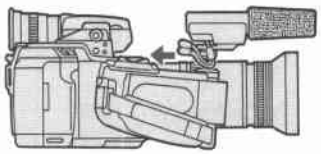
The microphone can be attached to and removed from the video camera. Before beginning to record, attach the microphone by following the procedure below.
When attaching or removing the microphone, make sure that camera is turned off.

❶ **Accessory Shoe (Lower)**
❷ **STEREO/ZOOM Switch**
❸ **Stereo/Zoom Microphone**
❹ **Microphone Attachment Screw**
❺ **Power Cord**
❻ **Microphone Cord**



1. **Attach microphone to lower accessory shoe. Tighten microphone attachment screw to fix microphone securely in place.**

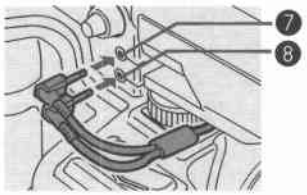
1



2. **Plug microphone's power cord and microphone cord securely into camera's DC OUT and MIC terminals. Wrap cord around front of microphone as shown.**

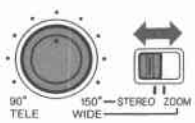
❼ **DC OUT Terminal**
❽ **MIC Terminal**

2



3. **Set STEREO/ZOOM switch to STEREO or ZOOM. For details on stereo/zoom microphone see page 62.**

3

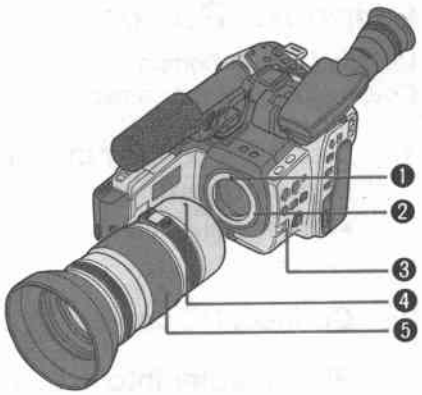


Notes:
- To avoid picking up and recording the sound of the camera motor and other camera noises, use the optional MB-100 Microphone Boom.
- The microphone is operated by the power supply from the camera.

Mounting and Removing VL Lens

The lens mount of this video camera is based on the VL Mount System. Any lens which is compatible with the VL Mount System can be attached to and used with this camera. (Lenses which bear the VL mark are compatible with the VL Mount System.) Make sure that the video camera is turned off before mounting or removing the lens.

❶ **Red Dot**
❷ **VL Lens Mount**
❸ **LENS RELEASE Switch**
❹ **Mount Positioning Point**
❺ **VL Mount Lens**

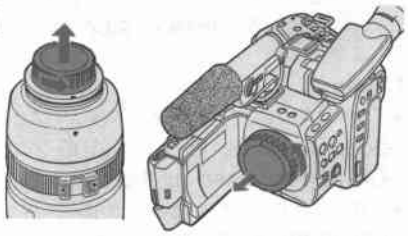


Mounting Lens [1]

1. **Remove dust cap from lens and body cap from camera.**
2. **Align red dot on camera body with mount positioning point on lens, then turn lens clockwise until it clicks and locks into place.**

[1]

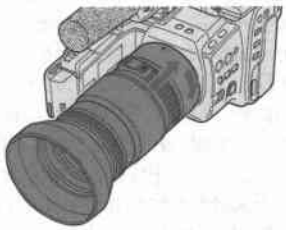
1



Removing Lens [2]

1. **Slide and hold LENS RELEASE switch and turn lens anticlockwise until it stops. Then remove lens from camera body.**
2. **When not using lens or camera, be sure to replace dust cap and body cap.**

2

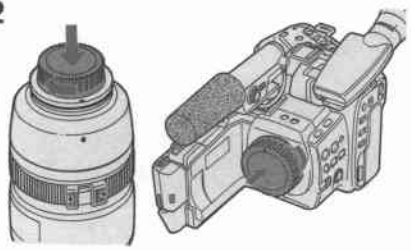


[2]

1



2



Notes:

- To avoid dropping or damaging the camera and lens, place them on a table or counter when mounting or removing the lens.
- Avoid direct sunlight or bright lights when changing or mounting the lens.
- Use only VL Mount lenses bearing the VL mark.
- If the camera is turned on when no lens is attached, "LENS" flashes in the viewfinder. Turn the camera off and mount a lens.
- If the camera is turned on while the optional EOS Adapter VL or Extender CL 2× is mounted, but no lens is attached, "LENS" flashes in the viewfinder. Turn the camera off and mount a lens.
- When the lens is removed from the video camera, be careful not to touch or dirty the lens, or the optical parts of the video camera (CCD). If they do get dirty, clean them with a optional CK-E1 Cleaning Kit (make sure that the video camera is turned off).

Power Sources

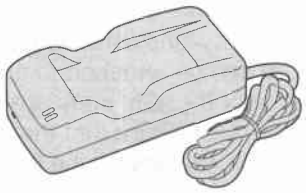
Using AC Power

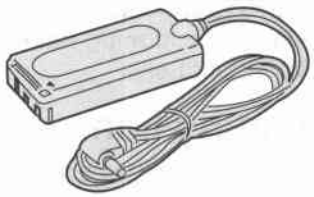
Use the CA-100 Compact Power Adapter and the DC-100 DC Coupler to power the camera from a mains outlet.

1. **Insert DC coupler in camera's power source compartment.**
 - Slide it in, then press it until it clicks and locks into place.
2. **Connect DC coupler to adapter.**
3. **Plug adapter into mains outlet.**
4. **Detach DC coupler after use.**
 - Slide and hold the BATT EJECT lever while you pull the DC coupler outwards from the front as shown.
 - Before removing the power source, place the camera in record pause or stop mode, then turn it off.

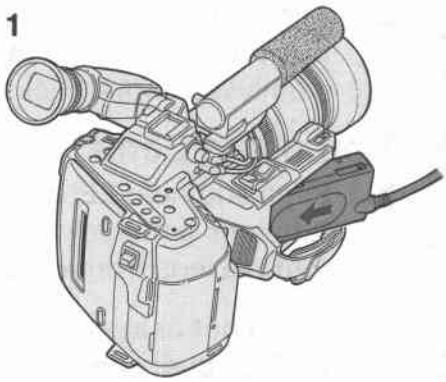
Notes:

- The CA-100 Compact Power Adapter converts current from a household mains outlet (100-240 V AC, 50/60 Hz) to the 6 V DC current used by the camera.
- If the compact power adapter is used next to a TV, it may cause the TV to emit noise — move the adapter away from the TV or the aerial cable.
- See the CA-100 instruction manual for further details.
- The camera can also be powered from a car battery, using the DC-100 together with the optional CB-110 Car Battery Adapter. The CB-110 plugs into a car cigarette lighter socket and runs off a 12 or 24 V DC negative ground battery. Use the CB-110 with the car engine idling.
- The EX2Hi cannot be used with the CA-E7 Compact Power Adapter, CB-E7 Car Battery Adapter or CR-E7K Charge Coupler.

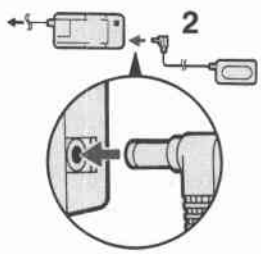




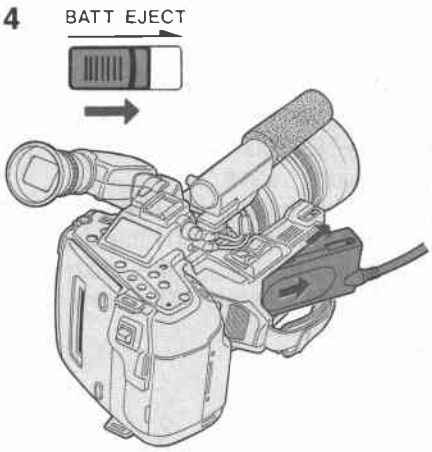
1



3



4 BATT EJECT



Charging and Attaching Battery Pack

Use the CA-100 Compact Power Adapter to charge the battery pack.

1. Insert battery pack in adapter as shown.

- The guide on the adapter fits into the groove on the battery pack.
- Make sure the DC coupler is not connected.

2. Plug adapter into mains outlet.

- The green OPERATE indicator lights up.
- The orange CHARGE indicator flashes to show that charging is in progress.

3. When battery pack is fully charged, remove from adapter and attach to camera.

- The CHARGE indicator glows steadily when the battery pack is fully charged.

4. Attach battery pack to camera.

- Insert the end marked with a triangle, then press in the battery pack until it clicks and locks into place.

5. Detach battery pack after use.

- Slide and hold the BATT EJECT lever while you pull the battery pack outwards from the front as shown.
- Before removing the power source, place the camera in record pause or stop mode, then turn it off.

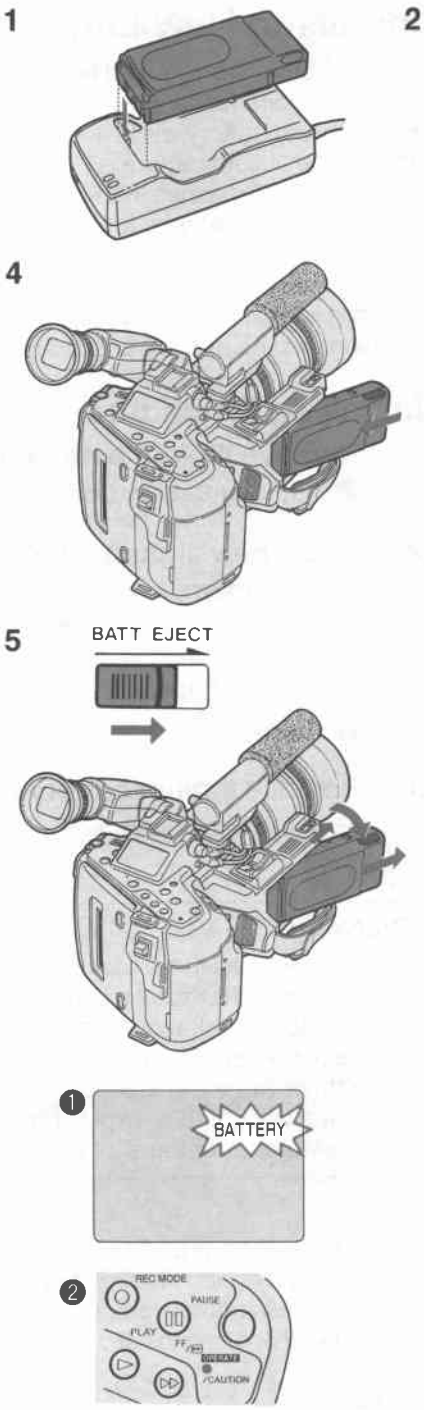
Recording and charging times:

- These times are approximate. Some camera functions and some optional lenses consume more power. Ambient temperature also has an effect on recording and charging times.
- The safest policy is to have enough batteries to cover two or three times the scheduled length of recording.

Battery Pack	Continuous Recording	Charging
BP-E718	60 min.	120 min.
BP-E722/ BP-E722D	70 min.	130 min.

Notes:

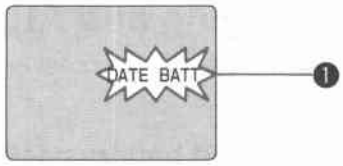
- When the battery pack is almost exhausted:
 ❶ "BATTERY" flashes in the viewfinder.
 ❷ The OPERATE/CAUTION indicator flashes.
- See "Battery Pack Notes" on page 11 for important information on using and recharging battery packs safely and effectively.



Installing New Lithium Battery

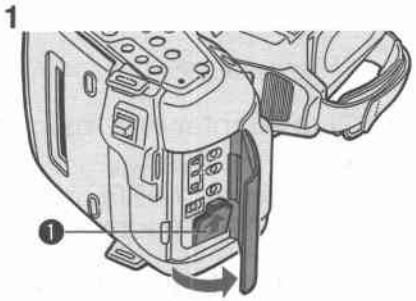
A lithium battery is required in order to use the title and auto date/data code functions.

- One lithium battery will last approximately one year.
- When the lithium battery is not installed, or the charge is low, "DATE BATT" flashes in the viewfinder.❶
 Replace the battery by following the procedure described below.
- When replacing the lithium battery, make sure that a power source is attached to the camera, otherwise the title and date settings will be erased, and will need to be reset.



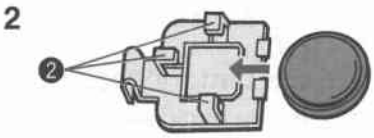
Installing Procedure

1. **Remove lithium battery compartment.**
 ❶ **Lithium Battery Compartment**

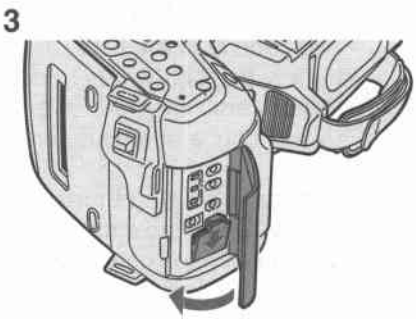


2. **Insert new lithium battery with plus (+) side facing down.**
 - Insert lithium battery in direction of arrow and press into place.
 - Make sure battery is secured in place under hooks.

 ❷ **Hooks**



3. **Replace lithium battery compartment.**
 - Make sure compartment is replaced properly (snaps into place).



Warning

The battery used in this device may present a fire or chemical burn hazard if mistreated. Do not recharge, disassemble, heat above 100°C or incinerate.
Replace the battery with Sanyo CR2025, Panasonic CR2025 or Duracell DL2025B. Use of another battery may present a risk of fire or explosion. The used battery should be handed back to the supplier for safe disposal.

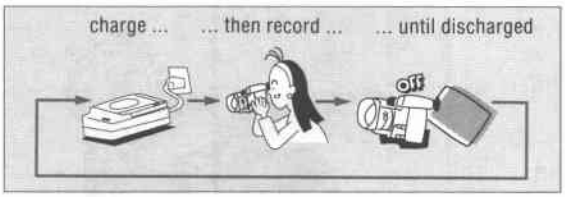
Cautions:

- Keep the battery out of children's reach. If it is swallowed, contact a physician immediately.
- Do not disassemble, heat, or immerse the battery in water, to avoid the risk of explosion.

Notes:

- Make sure that the plus (+) side is facing down in the lithium battery compartment.
- The lifespan of the lithium battery varies slightly depending on ambient conditions.
- To ensure proper contact, wipe the battery with a clean, dry cloth before use.
- Do not pick up the battery using tweezers or other metal tools which could cause a short circuit.

Battery Pack Notes



Charge the battery pack before you use it...

- You should charge a brand new battery pack twice before using it for the first time — a single charge may not be enough.
 Charge it completely (until the adapter's charge indicator glows steadily), then disconnect it and charge it again. This is the only time you should ever "double charge" the battery pack.
- The battery pack will naturally discharge itself over time. You should charge it the same day you plan to use it, or the day before.
- The battery pack becomes warm during use (and during charging). Wait for it to cool before charging or using it again.
- See the adapter instructions for details.

...save power while you are recording...

- You will get more recording time from your battery pack if you turn the camera off between shots, instead of leaving it in record pause mode.
- Recording time will be shorter than usual at low temperatures. You can use the battery pack between 0° and 40° C (32°-104°F), but it works best between 10° and 30° C (50°-86°F).

...and don't recharge it until it is exhausted.

- The camera flashes a "BATTERY" warning when the charge has almost run out. After a few more minutes' use, the camera turns off automatically. You can now either recharge or store the battery pack.

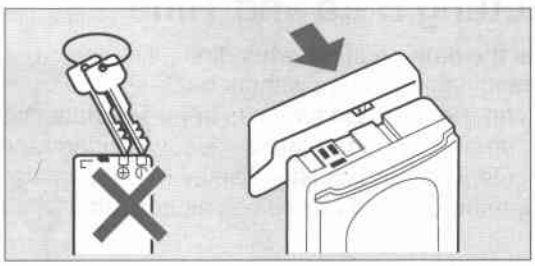
Disconnect the battery pack when you are not using it.

- Even when it is turned off, the camera will continue to slowly drain power from the battery pack. This means the battery pack will be discharged beyond the normal level if you leave it attached for a long time.

Keep the terminals clean.

- The camera, adapter or battery pack will not work properly if the terminals are dirty. Check them before use, and wipe them with a dry cloth or tissue if necessary.

DANGER!



Always attach the terminal cover.

- Do not allow any metal objects to touch the terminals. The battery pack contains a great deal of energy and short-circuiting it may cause a fire. Attach the terminal cover whenever you are not using the battery pack.

Treat the battery pack with care.

- Keep it away from fire (or it might explode).
- Do not try to disassemble or modify it.
- Do not drop or knock it.
- Do not get it wet.

Remember, it may start to give you less recording time...

- If you recharge it without first completely discharging it.
- If you leave it attached to the camera (or video light) for more than a week.
- If you don't use it for three months or more.

...but you should be able to "refresh" it.

- Discharge the battery pack by operating the camera until it turns off automatically. Recharge and repeat a few times.
- The MC-100 Multi-battery Charger (p.80) refreshes battery packs automatically.
- If this does not improve the battery pack's performance, it has reached the end of its life and must be replaced.

Specifications (BP-E718 Battery Pack)

Battery type: Rechargeable nickel cadmium battery Rated voltage: 6V DC Operating temperature: 0°-40°C (32°-104°F)		
Battery capacity, mAh		1800
Dimensions	Height, mm (in)	29 ($1^{3}/_{16}$)
	Width, mm (in)	47 ($1^{7}/_{8}$)
	Depth, mm (in)	120 ($4^{13}/_{16}$)
Weight, g (oz)		300 ($10^{1}/_{2}$)

- Weight and dimensions are approximate.
- The specifications and appearance of the battery pack are subject to change without notice.

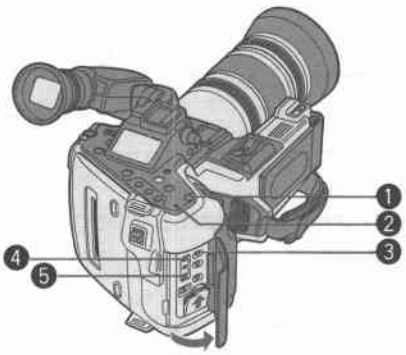
Camera Preparations

Setting Date and Time

Set the date and time when first using the camera, or after changing the battery without back-up power.
When the date and time has been set, data code (p.63) is automatically added to the cassette during recording. The regular date and/or time display (p.59) can also be superimposed on recordings as desired.

Example:
Setting the date to 8 October, 1994 and the time to 2:35 p.m.
The procedure below must be followed from beginning to end, even when making only partial changes.

❶ **Operate Button**
❷ **OPERATE/CAUTION Indicator**
❸ **TITLE/DATE Button**
❹ **+/− Buttons**
❺ **SHIFT Button**



1. Turn camera on.
- OPERATE/CAUTION indicator lights up.

2. Press and hold TITLE/DATE button for more than five seconds.
- Date and time are displayed in viewfinder.
- Year display flashes in viewfinder.

3. Press (+) and (−) buttons to scan year display.
- Press once to scan display one year at a time.
- Press and hold to scan display quickly.
- Press (−) button to scan display in reverse order.

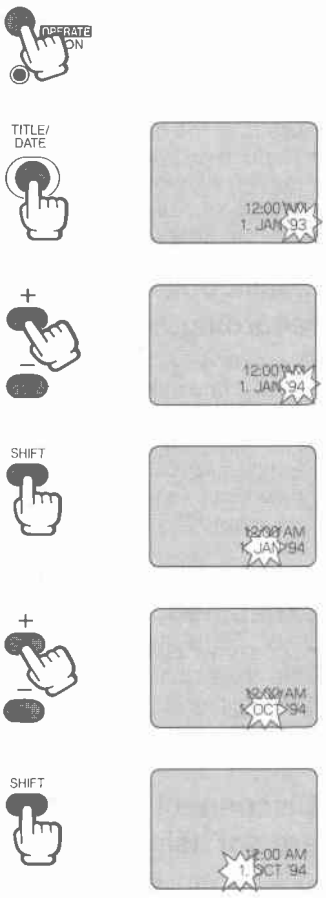
'93 ⇄ '94 ⇄ ··· ⇄ '01 ⇄ ··· ⇄ '13

4. Press SHIFT button when correct year is shown.
- Year is set and month display flashes.

5. Press (+) and (−) buttons to scan month display.

JAN ⇄ FEB ⇄ MAR ⇄ ··· ⇄ NOV ⇄ DEC

6. Press SHIFT button when correct month is shown.
- Month is set and day display flashes.



7. Press (+) and (−) buttons to scan day display.

- Camera knows number of days in each month and which years are leap years.

1 ⇄ 2 ⇄ 3 ⇄ 4 ⇄ 5 ⇄ ··· ⇄ 28 ⇄ 29 ⇄ 30 ⇄ 31

8. Press SHIFT button when correct day is shown.

- Day is set and hour display flashes.

9. Press (+) and (−) buttons to scan hour display.

- Hour display rotates through 24 hours.

12AM ⇄ 1AM ⇄ ··· ⇄ 10PM ⇄ 11PM

10. Press SHIFT button when correct hour is shown.

- Hour is set and minute display flashes.

11. Press (+) and (−) buttons to scan minute display.

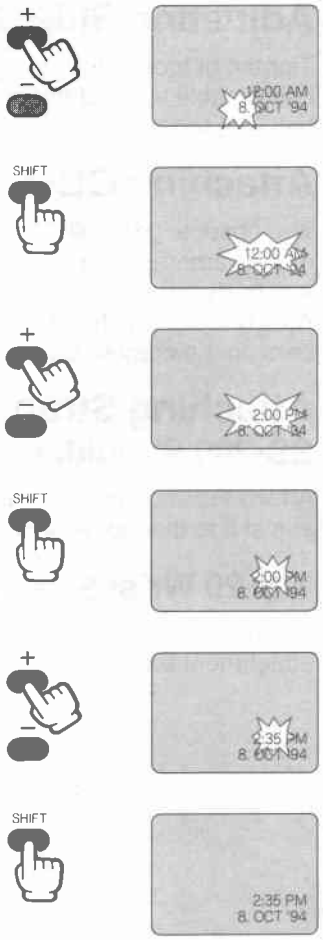
00 ⇄ 01 ⇄ 02 ··· 57 ⇄ 58 ⇄ 59

12. Press SHIFT button when correct minute is shown.

- Minute display stops flashing and auto date and time setting is completed.

Notes:

- The date and time cannot be set at the following times:
 1. during recording
 2. during record search/review
 3. during playback
 4. during line-in mode
- When replacing the lithium battery, make sure that a power source is attached to the camera. Otherwise, the title and date settings will be erased, and will need to be reset.



Adjusting Side Grip Belt [1]

Tighten or loosen the side grip belt as necessary for a comfortable fit. Hold the grip with the right hand and adjust the belt with the left.

Attaching GB-100 Grip Belt (option) [2]

The optional grip belt GB-100 can be attached to the body grip of the camera, and provides a firm, secure hold on the camera and better shooting stability.
Attach the grip belt to the upper and lower grip belt attachment bars on the camera body.

Attaching Straps [3]

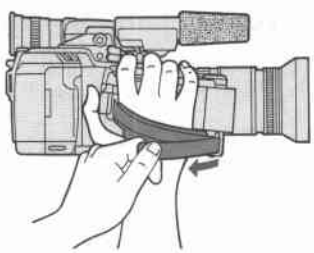
SS-200 Shoulder Strap ❶

Attach the shoulder strap to the strap attachment bars and adjust it to the most comfortable length.

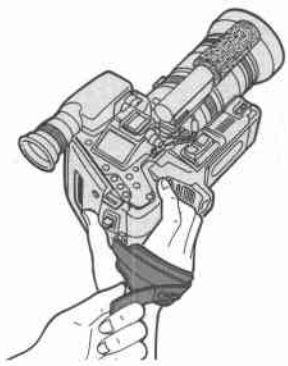
WS-20 Wrist Strap (Option) ❷

The optional wrist strap can only be attached to the lower strap attachment bar.

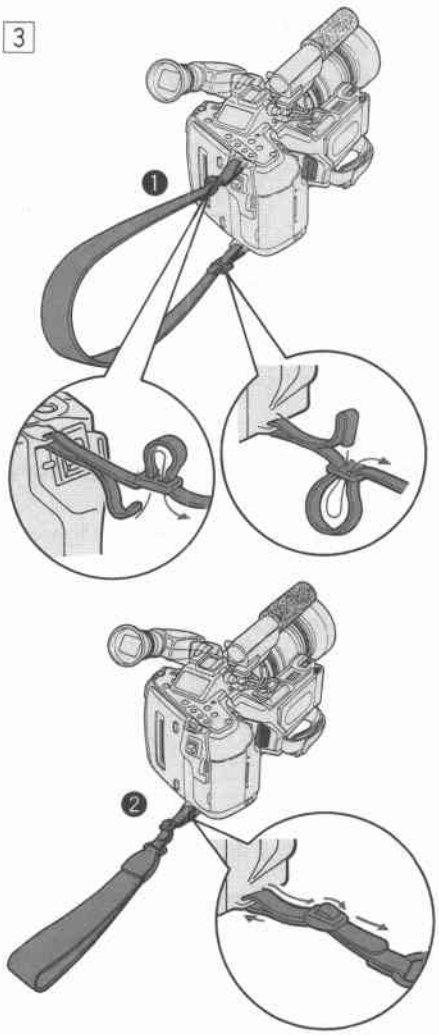
[1]



[2]



[3]



Adjusting Viewfinder/Choosing Grip [4]

The viewfinder rotates 180° to four click-stop positions. Choose the desired angle for recording.

The unique Dual-Action Grips offer a choice of two ways to hold the camera, each with its own set of start/stop and power zoom controls.
Select the appropriate grip depending on the subject and recording conditions.

Body Grip: ❶

Support the base of the camera with the left hand while holding the camera grip with the right hand. This ensures more recording stability, and a screen image with little shaking. Use this grip for telephoto, macro and low-angle recording.

Side Grip: ❷

Choose this grip style when shooting for longer periods of time. It offers extra mobility, especially when recording rapidly moving subjects.

Adjusting Dioptre [5]

Since eyesight varies from person to person, the dioptre must be adjusted to properly match each individual's eyesight. Adjust the dioptre when using the camera for the first time, when changing camera operators, or when changing eye distance from the Sports Finder. The Sports Finder allows you to monitor the viewfinder from as much as an arm's length from the camera.

To Adjust Dioptre:

1. **Turn camera on.**
2. **Turn dioptre adjustment ring until viewfinder displays are clearly visible.**
 - Adjust dioptre every time eye distance from finder is changed.

SF-200 Sports Finder [6]

The Sports Finder can be removed in order to clean the viewfinder screen.

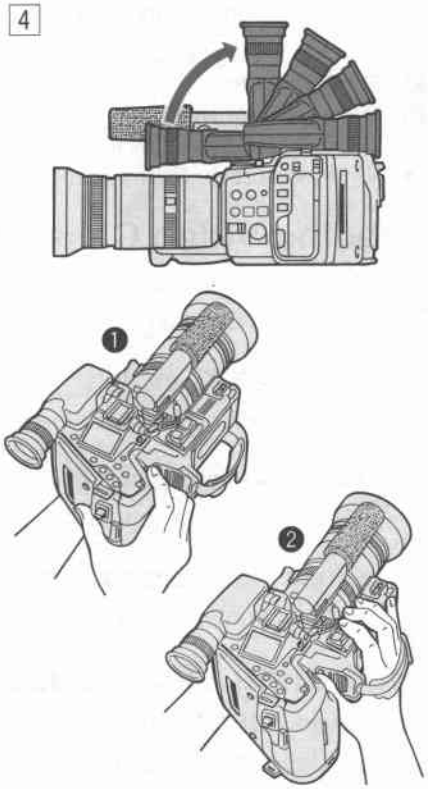
Removing Finder

1. **Align triangular marks on base and finder.**
2. **Gently slide finder off.**

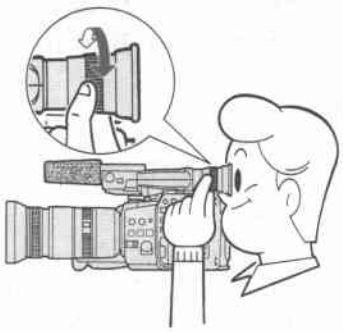
Attaching Finder

1. **Align triangular marks and slide finder onto base.**
2. **Turn finder to the right to lock in place.**

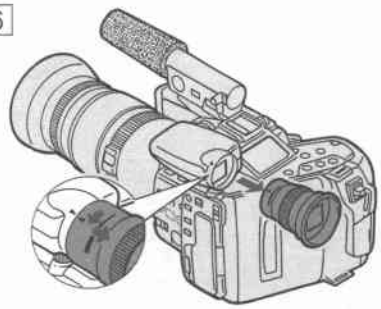
[4]



[5]



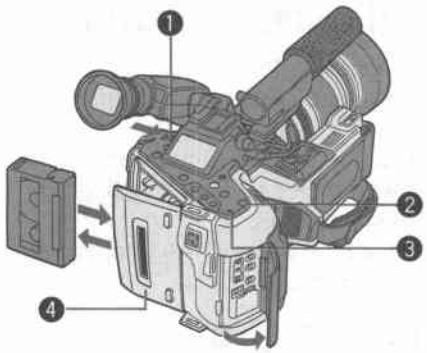
[6]



Video Cassettes

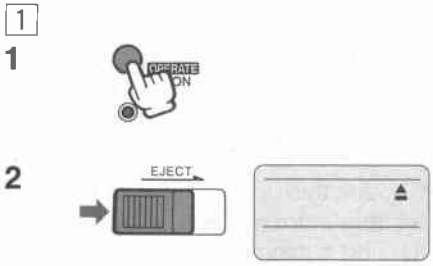
Use video cassettes with the Hi8 (E5 type) or 8 (P5 type) mark.

❶ **EJECT Switch**
❷ **Operate Button**
❸ **OPERATE/CAUTION Indicator**
❹ **Video Cassette Compartment**



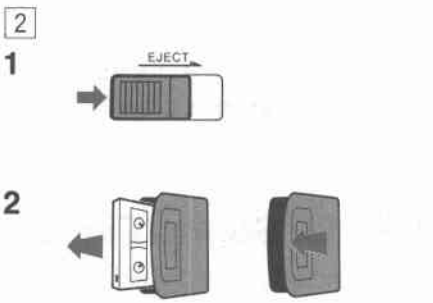
Loading Video Cassette [1]

1. **Turn camera on.**
 - OPERATE/CAUTION indicator lights up.
2. **Slide EJECT switch.**
 - Video cassette compartment opens.
3. **Load video cassette.**
 - Insert video cassette with window facing out.
4. **Close video cassette compartment.**
 - Tape counter is automatically reset to 0:00:00.



Unloading Video Cassette [2]

1. **Slide EJECT switch.**
 - Video cassette compartment opens.
2. **Unload video cassette and close video cassette compartment.**



Note:
- Be sure to press on the centre of the video cassette compartment, as shown in the diagram.

What is Hi8? [3]

Hi8 is the result of recent advances in video technology which have enabled the standard 8mm format to be upgraded to professional level.

Extended frequency deviation:
There are two components in the video signal: colour, called chrominance or chroma and represented by the letter C; and brightness, which is known as luminance and represented by the letter Y. These two components are recorded at different locations on the frequency spectrum. As far as picture detail is concerned, it is the Y signal that is more important — moving this signal to a higher carrier frequency and extending the frequency deviation range to a full 2 megahertz produces a dramatic increase in image quality. In fact, Hi8 can deliver over 400 lines of horizontal resolution.

High-grade tape:
A higher-frequency video system needs higher-quality tape. The metal particle (MP) and metal evaporated (ME) tapes used for Hi8 recording offer higher density and higher coercivity (ability to retain signals) than earlier formats, so more information can be stored more faithfully on the same area of tape.

S-video:
In conventional video formats, the Y and C components are processed as a composite signal. The resulting interference between the two components causes flicker and blurred colours. Hi8, on the other hand, processes the Y and C components separately, cutting down on 'crosstalk' and thereby greatly enhancing picture quality. Even the finest detail can be clearly and accurately reproduced.

Compatibility:
Although standard 8mm tapes and camcorders cannot record or play back in Hi8, backwards compatibility is maintained, so Hi8 camcorders can record and play back in either format, depending on the kind of tape used.

Erasure Prevention [4]

To protect your recordings from accidental erasure, slide the red switch on the cassette to the SAVE or ERASE OFF position ❶ (covering the hole). The camera will automatically go into stop mode if you load the cassette now.
If you want to record on the cassette again, push the switch back to the REC or ERASE ON position. ❷

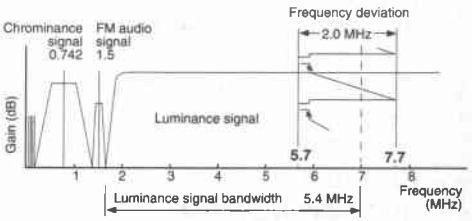
Cassette Care [5]

❶ Do not leave the cassette in the camera after use — return it to its case and store it in a cool, clean, dry place.
❷ The holes in the back of the cassette are used for transferring information — do not cover them.

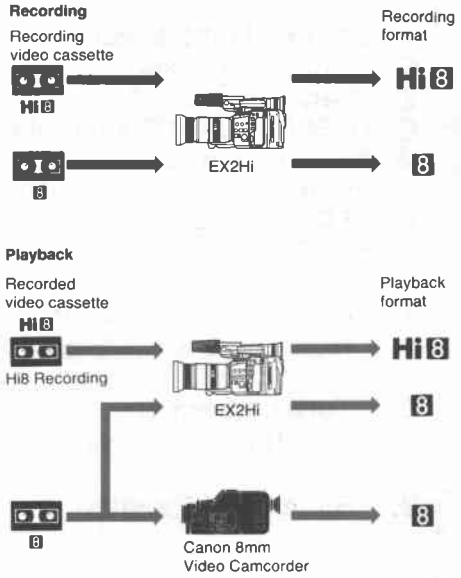
Note:
- For further information, refer to the instructions provided with the cassette.

[3]

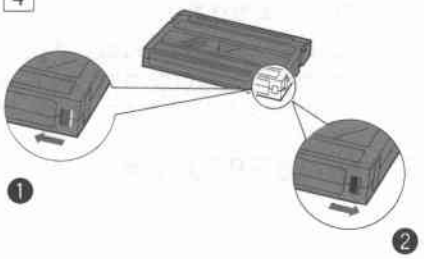
Hi8 Frequency Characteristics



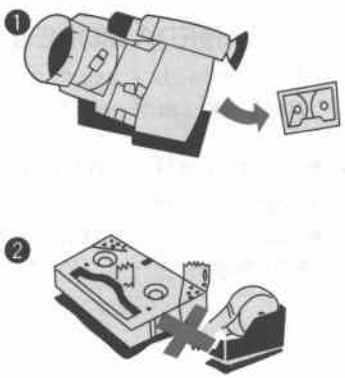
Hi8 and 8 Compatibility



[4]



[5]

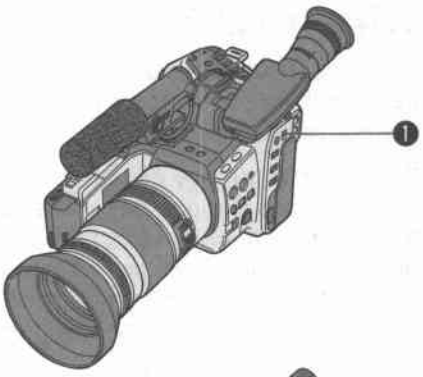


Camera Recording (Full Auto Mode)

Use video cassettes with the Hi8 (E5 type) or 8 (P5 type) mark.
Set the CAMERA MODE selector to A for easy, fully automatic recording. (The green mark becomes visible on the selector.)
In full auto mode, the functions marked with a green dot on the camera will operate as follows, regardless of the switch setting:

Focus	**A (auto)**
White Balance	**A (auto)**
Exposure	**A (auto)**
High-Speed Shutter	**Normal (1/50)**

For information on manual mode, see the section beginning on page 36.

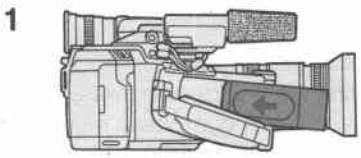




1. **CAMERA MODE Selector**
2. **Start/Stop Buttons**
3. **Operate Button**
4. **OPERATE/CAUTION Indicator**
5. **SP/LP Button**
6. **Video Cassette Compartment**
7. **REC MODE Button**
8. **EJECT Switch**

1. Attach power source.

- When using battery pack, make sure it is fully charged.



2. Turn camera on.

- OPERATE/CAUTION indicator lights up.



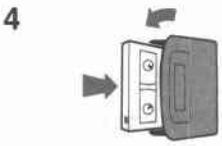
3. Slide EJECT switch.

- Video cassette compartment opens.



4. Load video cassette and close video cassette compartment.

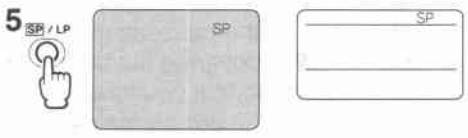
- Camera goes into record pause mode. If cassette's erasure prevention switch is set to SAVE, camera remains in stop mode.



5. Press SP/LP button to select recording mode.

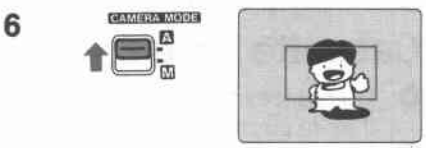
[SP → LP]

- For best picture quality, select SP.
- For double recording time, select LP.



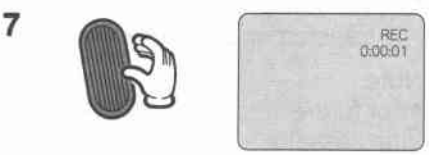
6. Set CAMERA MODE selector to A.

- Autofocus zone appears in viewfinder. Frame subject in zone and camera will focus automatically.



7. Press start/stop button.

- Recording starts.
- Tally lamp flashes rapidly and "REC" appears in viewfinder.



8. Press start/stop button again to temporarily pause recording.

- Press start/stop button once more to resume recording.
- To check recording, see page 20.

9. To end recording, turn camera off.

- OPERATE/CAUTION indicator goes off.
- If you do not intend to use camera for a long time, unload video cassette before storing.

Video Cassette Warnings 1

- "TAPE END" appears in the viewfinder when the tape is completely used up. ❶
- "CASSETTE" flashes in the viewfinder if the camera is turned on and no video cassette is loaded. ❷

Battery Pack Warning 2

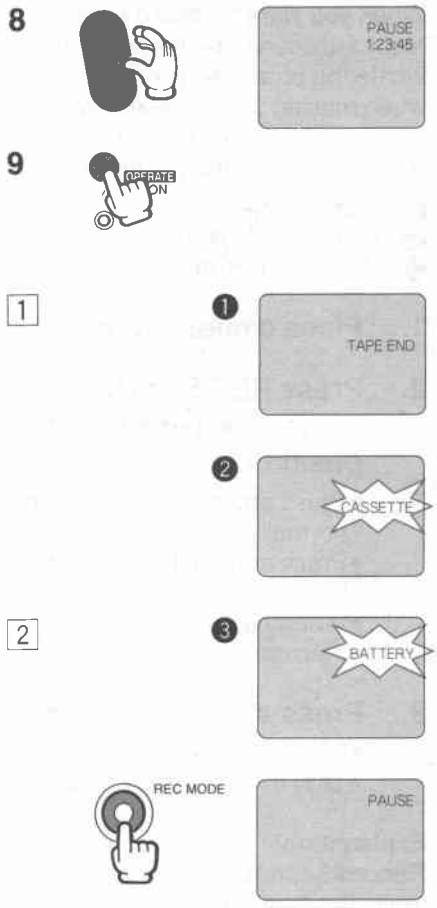
- "BATTERY" flashes in the viewfinder when the battery charge is nearly exhausted. ❸

Notes:

- The camera automatically turns off if the record pause mode lasts more than approximately five minutes.
- Check the camera's operation in the viewfinder to avoid mistakes (see pp. 89-91).
- Avoid recording near sources of electric or magnetic fields, such as a TV tower, which can cause noise in the picture or a camera malfunction.
- When recording in dark places, if a bright object such as a candle flame enters the picture, a luminous bar may appear vertically on the screen.
- If tape speed is changed during recording, the tape will contain noise at that point.
- Digital functions cannot be used during full auto mode.
- Use white balance set when recording under fluorescent, mercury-vapour or sodium-vapour lamps (see page 45).
- Resolution may be lower than usual when recording in very bright conditions, such as a sunny beach or ski resort. Use an ND filter to achieve a more natural image.

Hint:

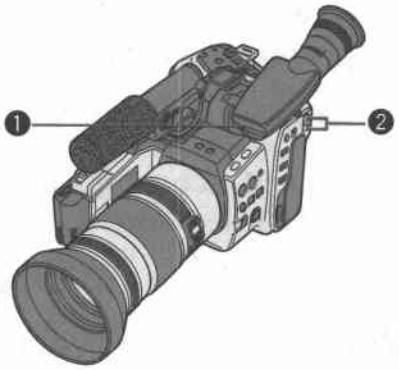
- Press the REC MODE button during stop mode to place the camera in record pause mode.



Record Search

When you want to record over a portion of a previously recorded scene, the record search function lets you easily locate the proper position to begin recording. Use this function when making additional recordings on a previously used video cassette. There will be no noise between the previously recorded scene and the newly recorded scene.

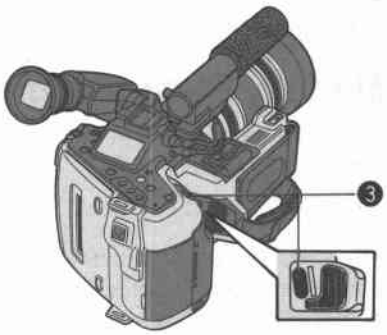
❶ **Tally Lamp**
❷ **REC SEARCH Buttons**
❸ **Start/Stop Buttons**



1. Place camera in record pause mode.

2. Press REC SEARCH buttons (+, −) to scroll forward or backward to locate recording start position.

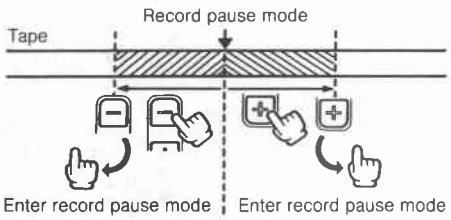
- Press and hold (+) button to play back recording normally.
- Press and hold (−) button to play back recording in reverse.
- When buttons are released, still image appears briefly, then camera returns to record pause mode.



3. Press start/stop button.

- Recording starts.
- Tally lamp flashes rapidly.

Explanation:
Record Search
While the camera is in record pause mode, this function searches the desired section to locate the recording start position.



1



2



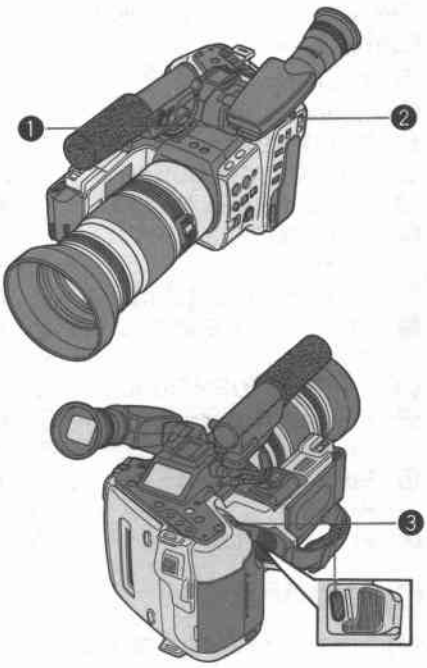
3



Record Review

Press the ⏪ (record review) button during record pause mode to play back the last segment of the recorded scene (approximately three seconds) in the viewfinder.

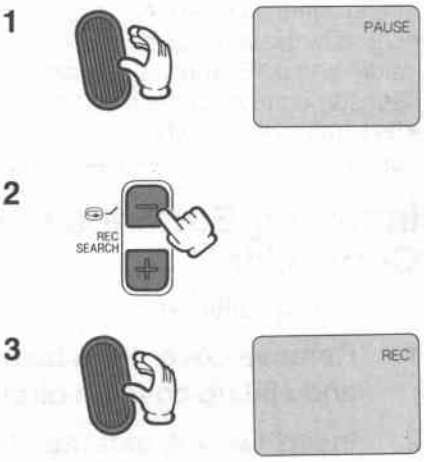
❶ **Tally Lamp**
❷ **⏪ (Record Review) Button**
❸ **Start/Stop Buttons**



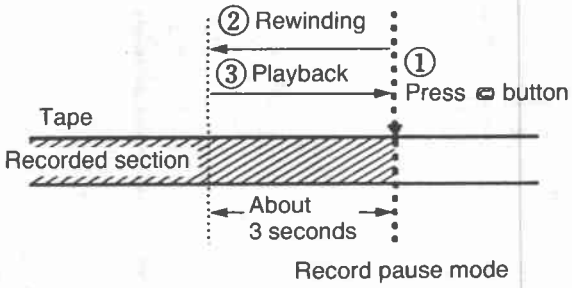
1. Press start/stop button during record mode.
- Camera enters record pause mode.

2. Press ⏪ (record review) button.
- Scene plays back in viewfinder.

3. Press start/stop button to resume recording.
- Tally lamp flashes rapidly.
- Recording starts again from where it left off.

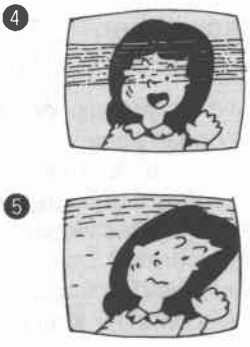


Explanation:
Record Review
Plays back recording in the order ① to ③ (as shown below) after record pause mode is entered. Camera returns to record pause mode after playback has ended.



Notes:
- Noise bar or skew may appear on the screen during record review or record search. This is not a malfunction.
- During record review, none of the other buttons (with the exception of the operate button) will function.

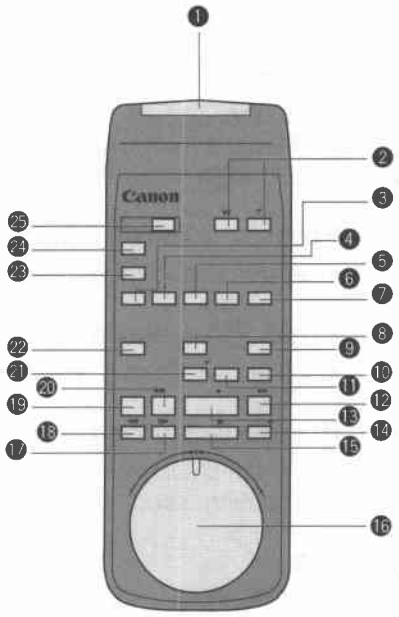
❹ **Noise Bar**
❺ **Skew (distorted picture)**



Wireless Controller

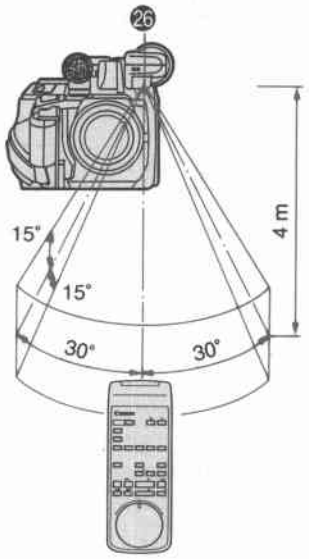
The wireless controller can be used to operate the camera from a distance.

❶ **Transmitter**
❷ **Zoom Buttons**
❸ **INDEX Button**
❹ **INDEX MARK Button**
❺ **INDEX ERASE Button**
❻ **TIME CODE INSERT Button**
❼ **DATE SEARCH Button**
❽ **COUNTER RESET Button**
❾ **TAPE RETURN Button**
❿ **Forward/Reverse ×2 Button**
⓫ **Forward/Reverse ×1 Button**
⓬ **FF ▶▶ Button**
⓭ **PLAY ▶ Button**
⓮ **PAUSE ❚❚ Button**
⓯ **STOP ■ Button**
⓰ **Shuttle Dial**
⓱ **❚❚▶ (Frame Advance) Button**
⓲ **◀❚❚ (Frame Reverse) Button**
⓳ **REC MODE Button**
⓴ **◀◀ REW Button**
㉑ **SLOW I▸ Button**
㉒ **ON SCREEN Button**
㉓ **DATE Button**
㉔ **TITLE Button**
㉕ **START/STOP Button**
㉖ **Remote Sensor**



Operation

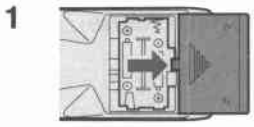
- Aim the wireless controller at the camera remote sensor and press the control buttons to operate the camera. The tally lamp lights up when the sensor receives a signal.
- Operate the wireless controller within a 30° angle on either side, and a 15° angle above and below the camera remote sensor, up to a distance of 4 metres.
- By rotating the viewfinder 180° to its forward position, the camera can receive wireless control signals from behind.

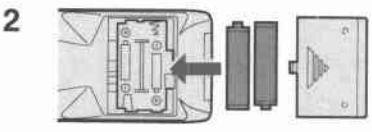


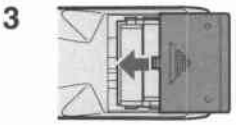
Inserting Batteries in Wireless Controller

The wireless controller operates on two AA batteries.

1. **Remove cover from back by pressing down and sliding cover in direction of arrow.**
2. **Insert two AA batteries following (+) and (−) markings inside unit. Be careful not to reverse polarity of batteries.**
3. **Replace cover.**







Notes:

- Do not leave the wireless controller exposed to direct sunlight or in hot or humid places.
- The wireless controller uses infrared beams to transmit signals, so sunlight or fluorescent light on the remote sensor may shorten the effective operating distance. If the wireless controller is operated too close to the camera, the remote sensor may have difficulty picking up the signals.
- The wireless controller will not function if the RS-1000 Rain Shield is attached to the camera.
- In order to operate the camera with the wireless controller, make sure that the TALLY/SENSOR ON/OFF switch is set to ON.

Playback Connection

Connection Procedure

To play back a recorded video cassette on a connected TV, use the DC-100 DC Coupler together with the CA-100 Compact Power Adapter (or optional CB-110 Car Battery Adapter) or the BP-E718 Battery Pack as a power source. See page 8 for details on how to connect the CA-100 (CB-110) to the DC-100.

- The connection accessories provided with your camera are listed on page 3.

Using TV/VCR with SCART Terminal

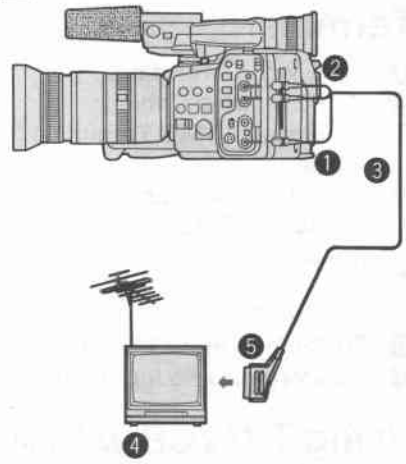
Stereo 1

❶ **To Video Terminal (Ⓥ yellow)**
❷ **To Stereo AUDIO Terminals (Ⓛ white = left; Ⓡ red = right)**
❸ **PC-170ST Stereo SCART Cable (white = left; red = right; yellow = video)**
❹ **TV**
❺ **To SCART Terminal**

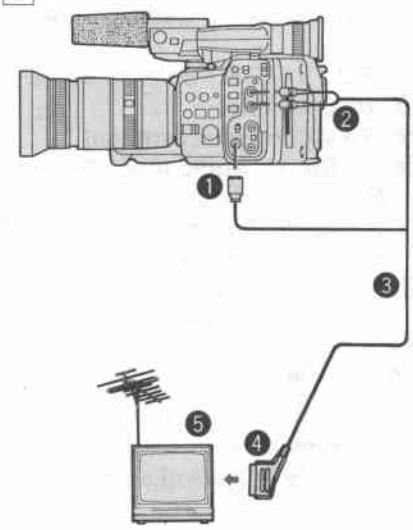
Stereo S-video 2

❶ **To S-VIDEO Terminal**
❷ **To Stereo AUDIO Terminals (Ⓛ white = left; Ⓡ red = right)**
❸ **PC-270SST S-stereo SCART Cable (white = left; red = right)**
❹ **TV**
❺ **To SCART Terminal**

1



2



Using TV/VCR with S-video Input Terminal [Stereo] [S-video] [3]

❶ **To S-VIDEO Terminal**
❷ **S-150 S-video Cable**
❸ **To Stereo AUDIO Terminals (Ⓛ white = left; Ⓡ red = right)**
❹ **ST-150 Stereo Cable (or STV-150 Stereo Video Cable) (white = left; red = right; yellow plugs on STV-150 are not used)**
❺ **TV**
Set TV/VIDEO Selector to VIDEO
❻ **To S-video Input Terminal**
❼ **To Stereo Audio Input Terminals**

Using TV/VCR with Audio/Video Input Terminals [Stereo] [4]

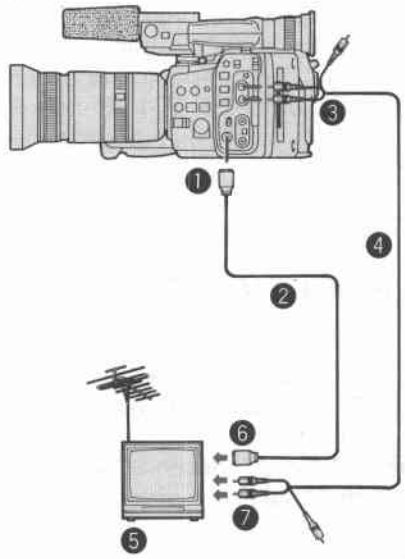
❶ **To Video Terminal (Ⓥ yellow)**
❷ **To Stereo AUDIO Terminals (Ⓛ white = left; Ⓡ red = right)**
❸ **C-150 AV Cable (yellow = video; other plug is not used)**[*1]
❹ **ST-150 Stereo Cable (white = left; red = right)**[*1]
❺ **TV**
Set TV/VIDEO Selector to VIDEO
❻ **BNC Adapter**[*2]
❼ **To Video Input Terminal**
❽ **To Stereo Audio Input Terminals**

[*1] Where available, the STV-150 Stereo Video Cable can be used instead of the C-150 and ST-150 (white = left; red = right; yellow = video).
[*2] For a TV or VCR which has a BNC-type video input, use a commercially available BNC plug adapter for connection.

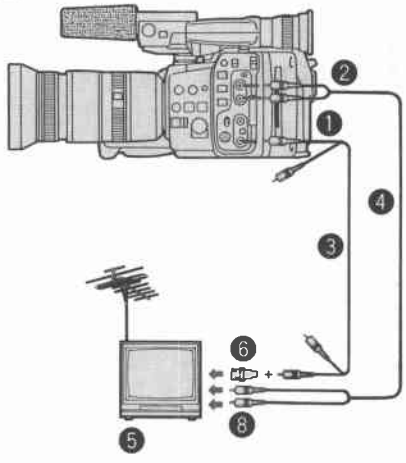
Monaural

To obtain a Ⓛ + Ⓡ monaural signal, connect the camera's audio terminal Ⓐ (black), instead of using the stereo AUDIO terminals as described above.

[3]



[4]



Using TV without Audio/Video Input Terminals Monaural

The optional RU-100 RF Unit is required in order to view recorded video cassettes on a TV which does not have audio/video input terminals. There are two RU-100 models, one for Europe and one for Australia. The connection and setting procedures for the European and Australian models differ.

European Model 5

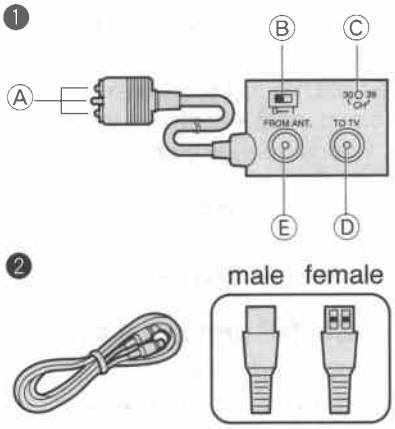
❶ RU-100 (Provided for UK, Europe models)
- **Ⓐ Connection Plug**
- **Ⓑ G/I Selector**
- **Ⓒ Video Channel Selector**
- **Ⓓ To TV Terminal**
- **Ⓔ FROM ANT. Terminal**

❷ Coaxial Cable with DIN-Connectors

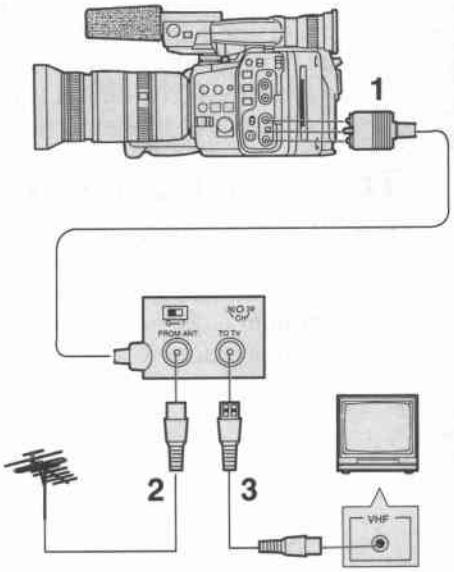
Connection Procedure 6

1. **Connect RF unit to camera.**
2. **Connect aerial cable to FROM ANT. terminal of RF unit.**
3. **Note the difference between 'male' and 'female' type DIN-connectors on coaxial cable. Connect female connector to TO TV terminal of RF unit. Connect male connector to aerial input terminal of TV.**

5



6



Selecting Video Channel [7]

Video channel means the channel in your area which is not used by a broadcasting station (channels 30-39). If your TV does not have audio/video input terminals, your TV and the video channel selector of the RU-100 RF Unit must be set to the video channel in order to view playback.

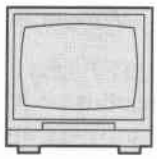
1. **Turn TV on.**
2. **Turn camera on and start playback (see p.29).**
3. **Set RF unit's G/I selector using a flat-edge screwdriver.**
 G: Continental Europe
 I: England, South Africa, Hong Kong
 - If G/I selector is set improperly, picture will appear, but no sound will be heard.
4. **Set TV and video channel selector to video channel.**
 For example, if video channel in your area is channel 33, tune TV to channel 33, then use a flat-edge screwdriver to set video channel selector of RU-100 to CH 33, adjust by turning until picture is clear.
 - The RU-100 RF Unit is shipped from the factory with the video channel selector set to channel 32.

To View a Regular TV Programme

The RU-100 RF Unit automatically selects the camcorder signal whenever the camcorder is connected to the TV through the RF unit and the camcorder is turned on. To view a regular TV programme, disconnect the camcorder from the RF unit, or turn the camcorder off.

[7]

1

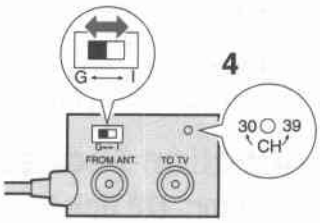


2



3

4



4



Australian Model 8

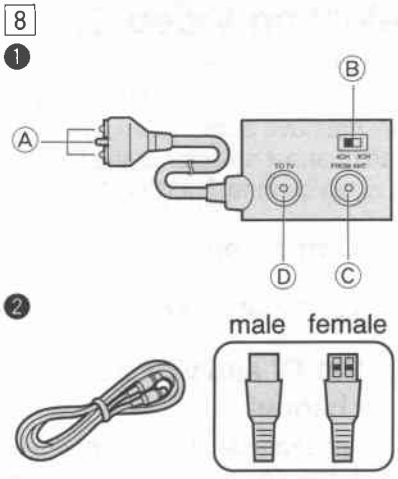
❶ RU-100
- Ⓐ Connection Plug
- Ⓑ Video Channel Selector
- Ⓒ FROM ANT. Terminal
- Ⓓ TO TV Terminal

❷ Coaxial Cable with DIN-Connectors

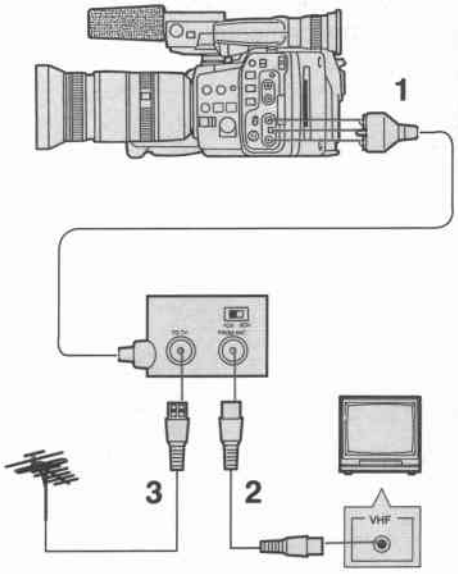
Connection Procedure 9

1. Connect RF unit to camera.
2. Connect aerial cable to FROM ANT. terminal of RF unit.
3. Note the difference between 'male' and 'female' type DIN-connectors on coaxial cable. Connect female connector to TO TV terminal of RF unit. Connect male connector to aerial input terminal of TV.

8



9



Selecting Video Channel [10]

Video channel means the channel in your area which is not used by a broadcasting station (Channel 0 or 1). If your TV does not have audio/video input terminals, your TV set and the video channel selector of the RU-100 RF Unit must be set to the video channel in order to view playback.

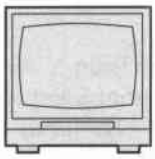
1. **Turn TV on.**
2. **Turn camera on and start playback.**
3. **Set TV and video channel selector to video channel.**
 For example, if video channel in your area is channel 0, set video channel selector of RU-100 to 0CH (using a flat-edge screwdriver), then tune TV to channel 0.

To View a Regular TV Programme

The RU-100 RF Unit automatically selects the camcorder signal whenever the camcorder is connected to the TV through the RF unit and the camcorder is turned on. To view a regular TV programme, disconnect the camcorder from the RF unit, or turn the camcorder off.

[10]

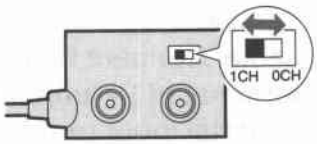
1



2



3

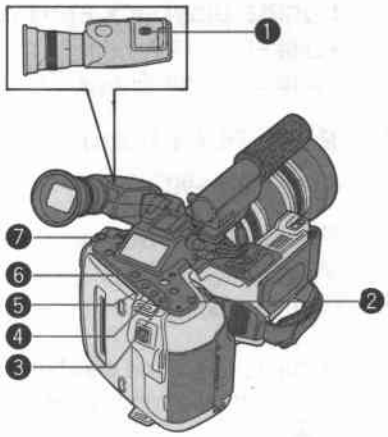


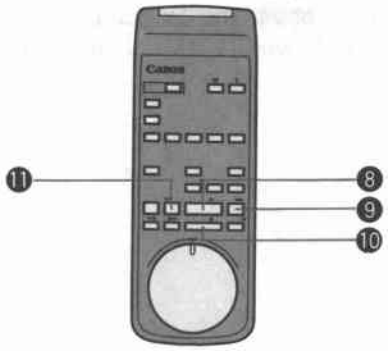


Playback Procedure

Before playback, make sure that all connection procedures are completed (pp.23-28).
When using wireless controller, make sure that TALLY/ SENSOR ON/OFF switch is set to ON.

❶ **TALLY/SENSOR ON/OFF Switch**
❷ **Operate Button**
❸ **FF Button**
❹ **PLAY Button**
❺ **REW Button**
❻ **STOP Button**
❼ **EJECT Switch**
❽ **PLAY ▶ Button**
❾ **FF ▶▶ Button**
❿ **STOP ■ Button**
⓫ **◀◀ REW Button**





1. Turn camera on.

- OPERATE/CAUTION indicator lights up.

2. Slide EJECT switch.

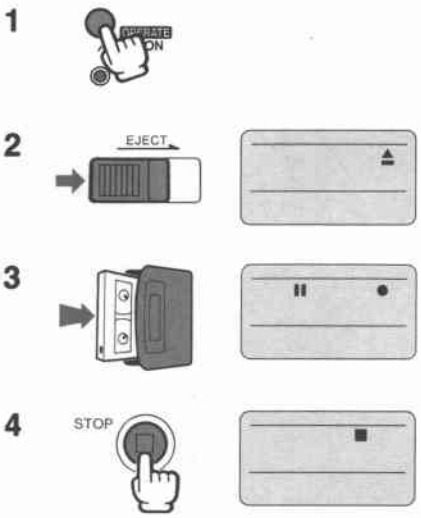
3. Load video cassette.

- Camera goes into record pause mode.
- Camera goes into stop mode if erasure prevention switch on video cassette is set to SAVE (see page 17).

4. Press STOP button.

Step 4 must be performed in order to commence playback.

- Playback functions will not operate if camera is not in stop mode.



5. Locate playback start point.

- Use FF or REW buttons to locate start point, or use the wireless controller (see page 31).

6. Press PLAY button to start playback.

- Playback can also be monitored in viewfinder.

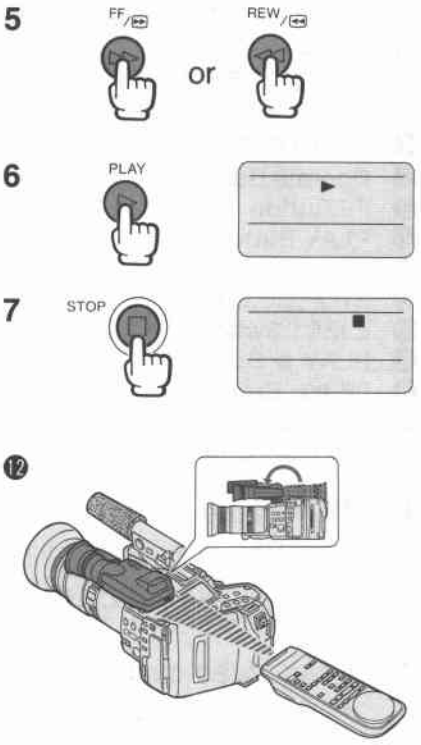
7. Press STOP button to end playback.

- Tape rewinds automatically if it is played to the end (automatic rewind function).

For playback, rotate the viewfinder 180° forward into its storage position. It can then receive wireless control signals from behind. ⓬

High-Frequency Feedback

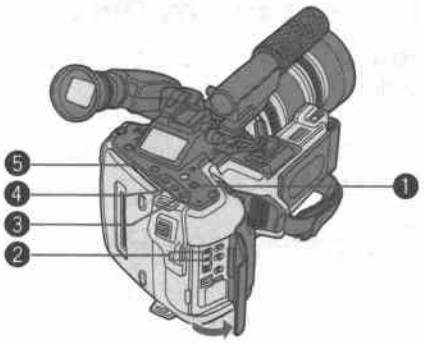
High-frequency feedback may occur if the camera microphone is too close to the TV speaker during record or record pause mode. Lower the TV volume or place the camera in stop mode.



Special Playback

In additon to normal playback, the following special playback modes are also available.

1. **PAUSE/STILL Button**
2. **+/– Buttons**
3. **FF Button**
4. **PLAY Button**
5. **REW Button**
6. **×1 Button**
7. **×2 Button**
8. **II► (Frame Advance) Button**
9. **◄II (Frame Reverse) Button**





Fast Forward Playback [1]

For fast forward playback at 9 times normal speed, press and hold the FF ▶▶ button in either normal playback or fast forward mode.

Rewind Playback [2]

For rewind playback at 7 times normal speed, press and hold the ◀◀ REW button in either normal playback or rewind mode.

Still Playback [3]

Press the PAUSE II button during playback. Press it again, or press the PLAY ▶ button to return to normal playback.

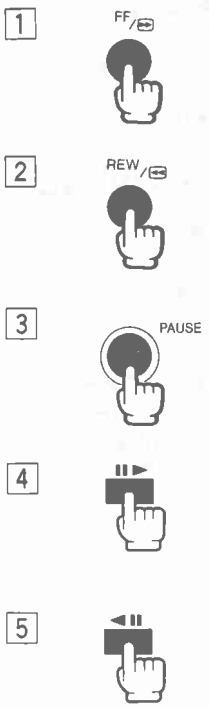
- The camera automatically returns to stop mode after about five minutes of continuous still playback.

Frame Advance [4]

To play back frame by frame, press the II► button repeatedly during still playback.
Press and hold to play back at a rate of one frame per second.

Frame Reverse [5]

To play back in reverse frame by frame, press the ◄II button repeatedly during still playback.
Press and hold to play back in reverse at a rate of one frame per second.



Slow Forward Playback 6

To play back at about 1/5 normal speed, press the SLOW I► button during normal playback.
Press the PLAY ▶ button to return to normal playback.
- The camera automatically returns to normal playback after about 30 seconds of slow playback.

Slow Reverse Playback 7

To play back in reverse at about 1/5 normal speed, press the ◀II button and then the SLOW I► button during normal playback.
Press the PLAY ▶ button to return to normal playback.
- The camera automatically returns to reverse ×1 playback after about 30 seconds of slow playback.

Forward ×1 Playback 8

Press the II► button and then the ×1 button during normal playback.
Press the PLAY ▶ button to return to normal playback.

Reverse ×1 Playback 9

Press the ◀II button and then the ×1 button during normal playback.
Press the PLAY ▶ button to return to normal playback.

Forward ×2 Playback 10

Press the II► button and then the ×2 button during normal playback.
Press the PLAY ▶ button to return to normal playback.

Reverse ×2 Playback 11

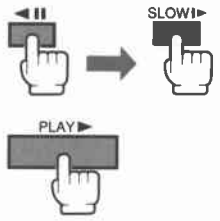
Press the ◀II button and then the ×2 button during normal playback.
Press the PLAY ▶ button to return to normal playback.

Notes:
- With the exception of forward ×1 playback, the soundtrack cannot be heard during these special playback modes.
- The special playback picture may be affected by horizontal noise bars and loss of quality. This is not a malfunction.

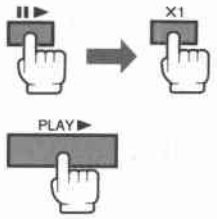
6



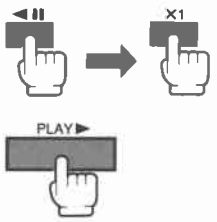
7



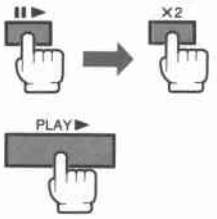
8



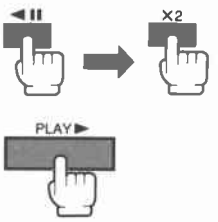
9



10

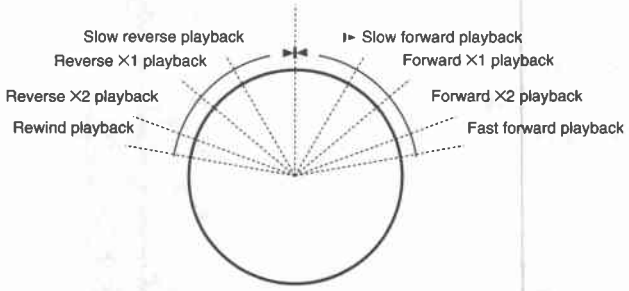


11



Shuttle Dial

The shuttle dial can be used in play or still mode to control the playback speed and direction. Slow, ×1 and ×2 playback modes (both forward and reverse), as well as fast forward and rewind playback, can be selected by turning the shuttle dial to different angles as shown.
When the shuttle dial is released, it returns to the centre position, and the camera enters still mode.



Slow Tracking Adjustment 12

White noise bars may appear at the top or bottom of the screen during slow playback. Use the following procedure to correct the tracking while you monitor the picture in the viewfinder or on a connected TV screen.

1. **Press + or − button during slow playback.**
 - The tracking display appears in the viewfinder.
2. **Press + or − button to adjust slow tracking and reduce picture noise to minimum level.**
 - The tracking adjustment is saved in the camera's memory.

Still Tracking Adjustment 13

Tracking can also be adjusted to correct vertical picture jitter during still playback. Monitor the picture in the viewfinder or on a connected TV screen while following this procedure:

1. **Press + or − button during still playback.**
 - The tracking display appears in the viewfinder.
2. **Press + or − button to adjust still tracking and reduce picture jitter to minimum level.**
 - The tracking adjustment is saved in the camera's memory.

Note:
- Tracking displays can be seen on a connected TV screen by pressing the wireless controller's ON SCREEN button.

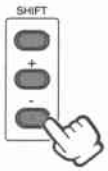
12

1



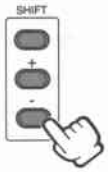


2



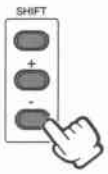
13

1





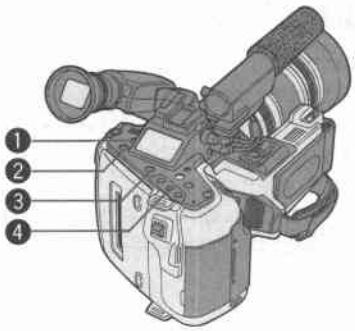
2

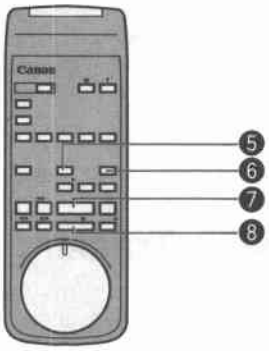


Tape Return

Tape return allows you to quickly locate a desired scene on the video cassette.

❶ **C. RESET Button**
❷ **TAPE RETURN Button**
❸ **STOP Button**
❹ **PLAY Button**
❺ **COUNTER RESET Button**
❻ **TAPE RETURN Button**
❼ **PLAY ▶ Button**
❽ **STOP ■ Button**





1. When desired scene is located during playback, press C. RESET button (COUNTER RESET button on wireless controller).

- Make sure that the tape counter, not the time code, is displayed. (See page 69.)
- Tape counter is reset to 0:00:00

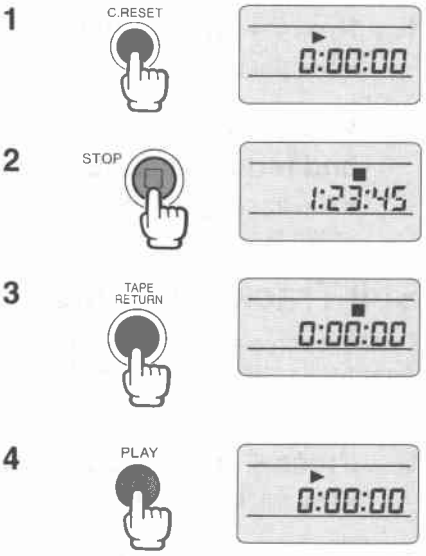
2. Press STOP ■ button when playback finishes.

3. Press TAPE RETURN button.

- Tape rewinds and stops automatically when counter reading reaches near 0:00:00.

4. Press PLAY ▶ button.

- Playback starts at spot where C.RESET button was pressed.



Tape Counter

During recording, the tape counters in the viewfinder and the LCD display indicate how long you have been recording.

- The tape counter time and the actual recording length may be slightly different. Use the tape counter only as an approximate guide.
- When recording in LP mode, the acutual recording length is approximately twice that shown on the tape counter.
- The tape counter also appears during playback and record search, so it can be used to verify how long the tape has run.

Notes:

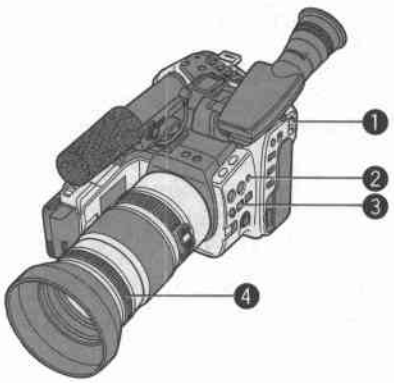
- Tape return does not function when the initial tape reading is near 0:00:00, or when the time code is displayed (p.69).
- Press the STOP ■ button to cancel tape return.

Hint:

- Every time a video cassette is loaded, the tape counter is automatically reset to 0:00:00. This means that after recording, the tape return function can be used to locate the recording start point.

Focusing

❶ **CAMERA MODE Selector**
❷ **FOCUS A/M Button**
❸ **AF MACRO/PUSH AF Button**
❹ **Focusing Ring**



Manual Mode 1

To select manual mode, set the CAMERA MODE selector to M (manual). The recording settings can then be chosen freely by pressing the appropriate buttons.

- Each function (except for digital functions) which is set manually remains stored in memory even if the camera is turned off. Also, if the CAMERA MODE selector is changed to A (auto) and then back to M (manual), these settings will reappear. However, if the power supply is disconnected, all settings will revert to auto.

1



Selecting Focusing Mode 2

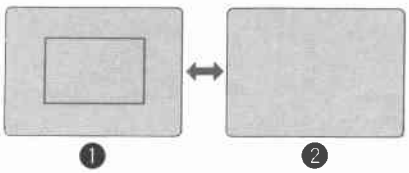
There are two focusing modes: autofocus and manual focus. The focus can be automatically adjusted using autofocus mode, or adjusted manually using manual focus mode.

- When the CAMERA MODE selector is set to M (manual), each time the FOCUS A/M button is pressed the focus mode changes as shown below.

2



Camera ON → A/autofocus ❶ mode → M/manual focus ❷ mode



Autofocus 3

Press FOCUS A/M button and select A (auto).

- When camera is set to A (auto), autofocus zone appears in viewfinder, and subject inside zone is focused automatically.
- Use manual focus when recording subjects that are difficult to focus automatically.
- Autofocus zone can be displayed on a connected TV screen by pressing ON SCREEN button on wireless controller. AF zone is not recorded.

There are four autofocus modes.

1. Normal Autofocus
 The camera automatically focuses on subjects at distances of 1.2 metres to infinity.

2. Push Autofocus (See p.38)
 During manual focus mode, press the AF MACRO/PUSH AF button to quickly adjust the focus automatically.

3. AF Macro (See p.38)
 When a lens with tele-macro shooting capabilities is used, subjects in the tele-macro range can be focused automatically.

4. Wide Macro Recording (See p.41)
 When a lens with wide macro shooting capabilities is used, subjects in the wide macro range can be focused automatically.

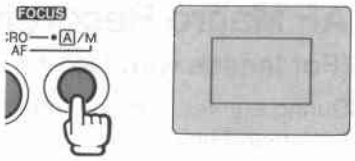
Subjects Not Suitable for Autofocus 4

❶ Shiny subjects or subjects that reflect light
❷ Horizontally striped subjects
❸ More than one subject in viewfinder/different distances
❹ Rapidly moving subjects
❺ When using tele-converter or wide-converter
❻ Slanted subjects
❼ Subjects behind glass (windows with water or dirt on them)
❽ Dark subjects
❾ Subjects with little or no contrast (a white wall, for example)

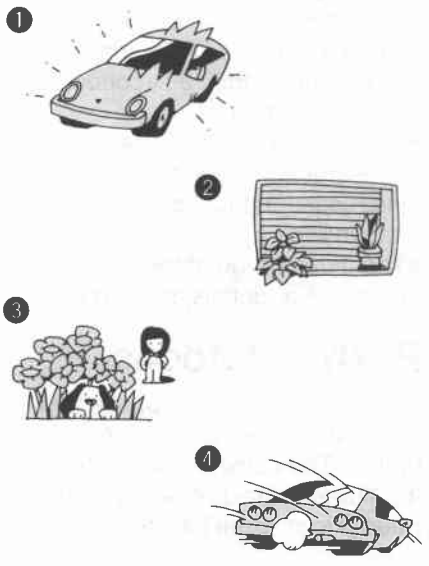
Notes:

- Do not touch the focusing ring during autofocus.
- Autofocus might stop if exposure control is performed.
- When using autofocus, the focusing ring may rotate as it frames and reframes the subject. This is not a malfunction.

3



4



AF Macro Recording 5

(For lenses with tele-macro capability)

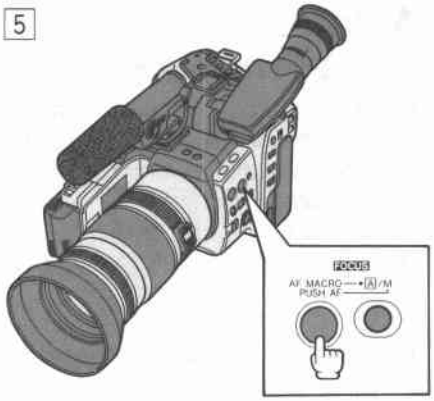
During autofocus mode, press the AF MACRO/PUSH AF button and hold it down to perform autofocusing in the tele-macro range.
The camera will continue to focus in the tele-macro range for 8 seconds after the AF MACRO/PUSH AF button is released. If the subject moves away from the lens to a distance of more than 1.2 metres, the camera will automatically change to normal autofocus. If the subject moves back into the tele-macro range within 8 seconds, the camera will return to AF macro recording.

- Tele-macro recording cannot be performed with a lens that does not have tele-macro shooting capabilities. (Check the instruction manual of your lens to find out if it has tele-macro capabilities.)
- The exact range of tele-macro focusing depends on the type of lens. For details, refer to the instruction manual of the lens.

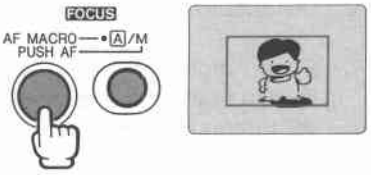
Push Autofocus 6

During manual focusing, use push autofocus to quickly adjust the focus automatically. Press the AF MACRO/PUSH AF button. The camera will function in autofocus mode as long as the button is held. When the button is released, the camera returns to manual focusing mode.

5



6



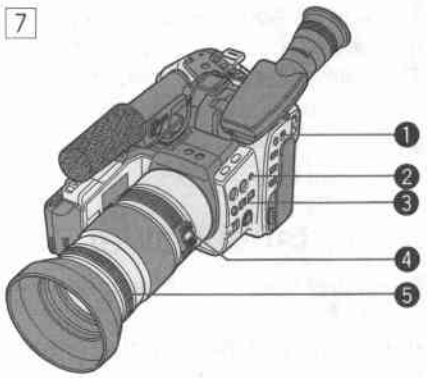
Manual Focus [7]

Use manual focus when shooting subjects that are not suitable for autofocus. Make sure that the CAMERA MODE selector is set to M (manual).

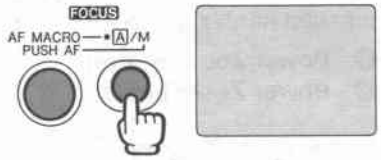
❶ **CAMERA MODE Selector**
❷ **FOCUS A/M Button**
❸ **AF MACRO/PUSH AF Button**
❹ **Zooming Ring**
❺ **Focusing Ring**

1. **Press FOCUS A/M button to select M (manual).**
 - Autofocus zone disappears from viewfinder.
2. **When using a zoom lens, rotate zooming ring to telephoto end.**
3. **Focus on subject.**
 - Look through viewfinder and rotate focusing ring to focus on subject.
4. **When using a zoom lens, use zooming ring to reframe subject as desired.**
 - To resume autofocus, press FOCUS A/M button again.

[7]



1



2



3



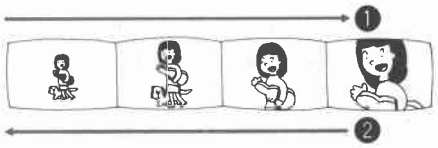
4



Zooming (For Zoom Lenses)

Zoom in on hard-to-catch subjects, or add close-up personal touches to recordings. Zoom out to reveal a breathtaking view. This camera has three zooming methods: power zoom, manual zoom and wireless zoom.

❶ **Zoom In**
❷ **Zoom Out**

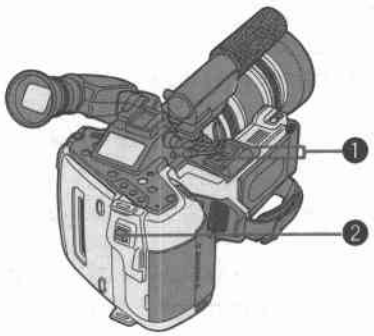


Adjustable Power Zoom 1

Press and hold the T button or push zoom lever up to zoom in to telephoto.
Press and hold the W button or press zoom lever down to zoom out to wide angle.
If the power zoom controls are pressed lightly, the camera zooms in and out slowly. If the power zoom controls are pressed harder, the zooming speed increases.

❶ **Power Zoom Buttons**
❷ **Power Zoom Lever**

1



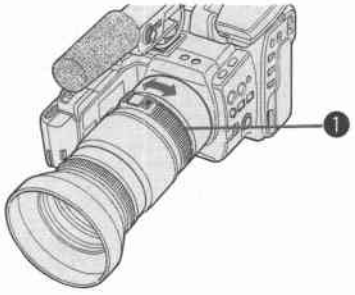


Manual Zoom 2

Turn the zooming ring to zoom in and out manually.

❶ **Zooming Ring**

2



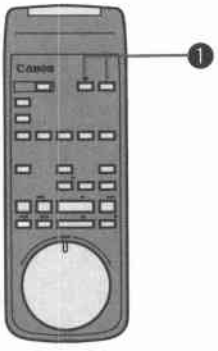
Wireless Zoom 3

The wireless controller can be used to operate the zoom controls from a distance. The zooming speed cannot be altered when using the wireless controller.
Press and hold the T button to zoom in to telephoto.
Press and hold the W button to zoom out to wide angle.

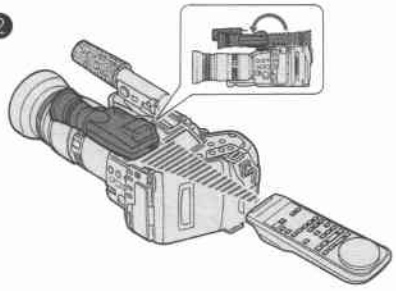
❶ **Zoom Buttons**

- It is possible to operate the wireless zoom from behind the camera by rotating the viewfinder 180° to its forward position. ❷
- Mount the camera on a tripod.
- Use a TV monitor during wireless zooming to view the shots.

3



❷



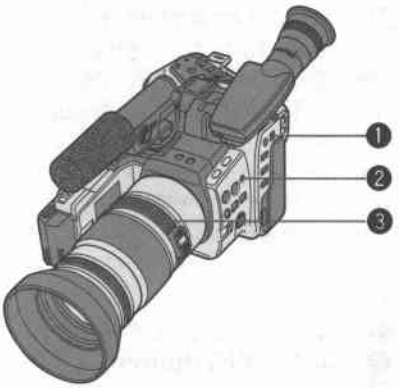
Notes:

- Even the slightest hand movement will appear in the recording when shooting in the telephoto range. Use a tripod for better results.
- Overuse of zooming may make recordings seem too busy. Selective use of zooming is more effective.

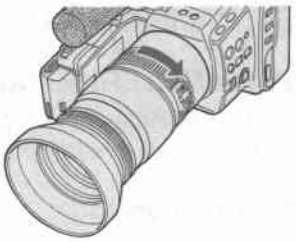
Wide Macro Recording (For Zoom Lenses with Wide Macro Capability)

Use wide macro recording to record small subjects such as flowers and insects close-up, to full screen, and achieve extremely fine detail in recordings. You can move in very close to the subject, analysing rich detail while providing a full-screen image and greater perspective. Make sure the CAMERA MODE selector is set to M (manual).

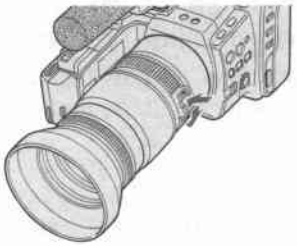
- Wide macro recording cannot be performed with a lens that does not have wide macro capabilities. (Check the instruction manual of your lens to find out if it has wide macro capabilities.)
- The minimum focusing distance in wide macro recording varies depending on the lens. For details, refer to the instruction manual of your lens.



❶ **CAMERA MODE Selector**
❷ **FOCUS A/M Button**
❸ **Zooming Ring**

1 

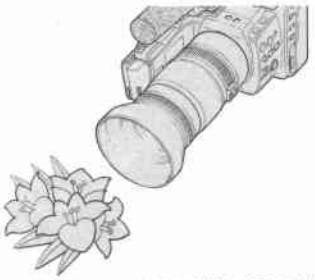
1. Rotate zooming ring to wide-angle end.

2 

2. Press M button on zooming ring and rotate into macro range.

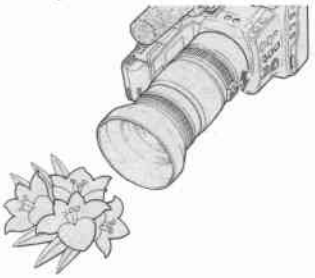
- This must be done regardless of whether autofocus or manual focus is used.

3. Approach subject until image in viewfinder is desired size.

3 

4. When using autofocus, camera focuses automatically.
To use manual focus, press FOCUS A/M button, then rotate zooming ring to focus on subject.

- Focusing is performed in macro range.

4 

5. Begin recording.

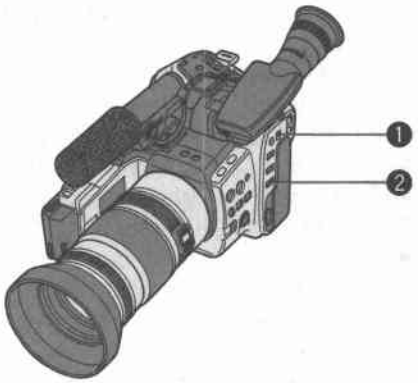
Notes:

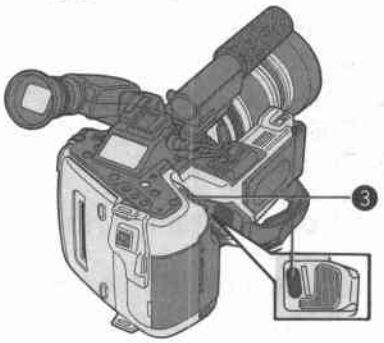
- To change the subject image size, move the camera forward or backward slightly, and then adjust the focus again.
- A tripod is recommended for better recording stability.
- Make sure there is adequate lighting.

Selecting Light Metering Mode

This camera offers two different light metering modes: correlated two-field metering and peak metering. Under normal conditions, select correlated two-field metering to obtain the most suitable exposure of subjects in the centre of the viewfinder.
Use the peak metering mode when recording under bright spotlights, when recording neon lights or street lights, or when the subject is particularly bright. In this mode, the camera automatically adjusts exposure to the brightest object in the picture.

❶ **CAMERA MODE Selector**
❷ **METERING Button**
❸ **Start/Stop Buttons**





Selecting Peak Metering Mode

1. **Set CAMERA MODE selector to M (manual).**

2. **Press METERING button.**
 - "PEAK" display appears in viewfinder, and camera enters peak metering mode.

3. **Make recording.**

4. **Press METERING button again to return to normal light metering mode.**
 - "PEAK" display disappears from viewfinder, and camera returns to correlated two-field metering mode.

Note:
- If the CAMERA MODE selector is set to A (auto), the camera returns to correlated two-field metering mode.

1



2



3

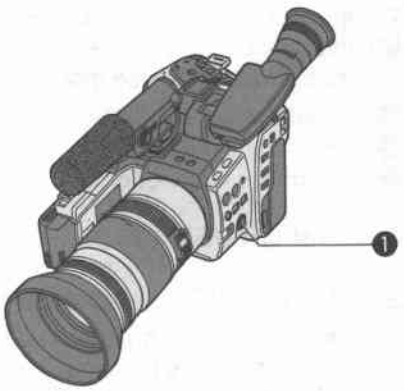


4



AE Level Control

By controlling the level of the automatic exposure (AE) function, you can brighten or darken the image slightly in order to manipulate the mood of the scene or compensate for particularly tricky lighting.



❶ **Exposure Controller**

1. Set CAMERA MODE selector to M (manual).

2. Turn exposure controller to adjust AE level to desired level.

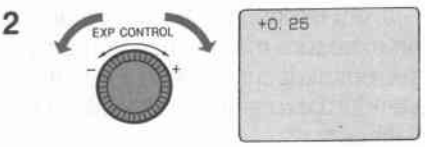
- To make recorded images brighter, turn controller towards (+).
- To make recorded images darker, turn controller towards (−).
- Controlled AE level is displayed in viewfinder. AE level changes in increments of 0.25. Highest setting is +1.0. Darkest setting is −1.0.

$$-1.0 \rightleftarrows -0.75 \rightleftarrows -0.5 \rightleftarrows -0.25 \rightleftarrows \underset{\text{(no display)}}{\text{standard}} \rightleftarrows +0.25 \rightleftarrows +0.5 \rightleftarrows +0.75 \rightleftarrows +1.0$$

3. Begin recording.

- To reset AE level to standard, turn controller until level display disappears, or set CAMERA MODE selector to A (auto).







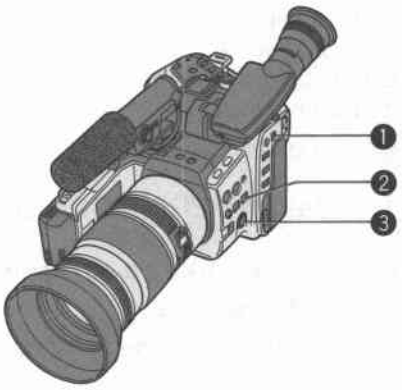
Notes:

- The standard AE level will vary depending on which light metering mode (correlated two-field metering or peak metering) is selected (see previous page).
- With some lenses, such as the reflex lens, the exposure controller will be less effective than usual.

Manual Exposure Control

When recording under conditions where sudden changes in lighting may occur, or when you wish to adjust the exposure to suit your own tastes, use manual exposure control.

❶ **CAMERA MODE Selector**
❷ **EXP A/M Button**
❸ **Exposure Controller**

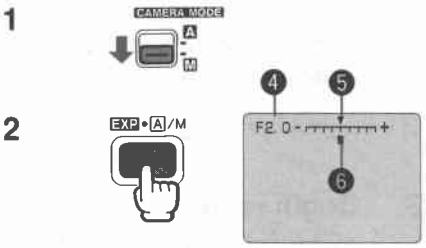


1. Set CAMERA MODE selector to M (manual).

2. Press EXP A/M button to select M (manual).

- Exposure setting is locked to its current level when EXP A/M button is pressed.
- Exposure meter appears in viewfinder. The following information is displayed:

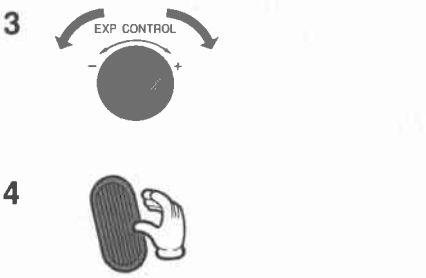
❹ **Current f-stop Setting**
❺ **Standard Exposure Level Indicator**
❻ **Current Exposure Level Indicator**



Current exposure level indicator moves up (+) and down (−) on exposure meter when you turn exposure controller. If current exposure level is more than 2 stops above or below standard exposure level, current exposure level indicator flashes.

3. Turn exposure controller to adjust exposure to desired level.

- To widen lens aperture, turn controller towards (+).
- To narrow lens aperture, turn controller towards (−).
- Current f-stop setting display and current exposure level indicator change as controller is turned.



4. Begin recording

- To return to AE mode, press EXP A/M button again, or set CAMERA MODE selector to A (auto).

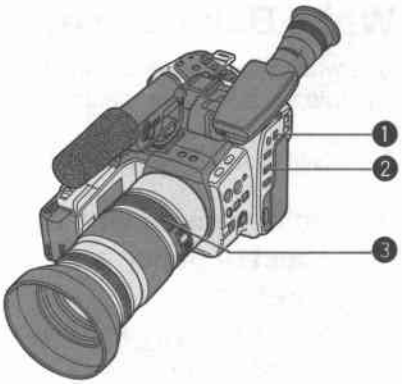
Notes:

- The standard exposure level will vary depending on which light metering mode (correlated two-field metering or peak metering) is selected (see p.42).
- The displayed current f-stop setting is approximate; use it as a guide.
- With some lenses, such as the reflex lens, the exposure controller will be less effective than usual.
- When using the reflex lens, exposure is controlled by switching the internal ND filters. However, the exposure meter can still be used. Select the filter which brings the current exposure indicator as close as possible to the standard exposure indicator (at the centre of the scale).

White Balance

White balance is the adjustment used to make white subjects look white and to obtain a natural colour balance for recordings. The camera has two systems for white balance adjustment: auto and set.

❶ **CAMERA MODE Selector**
❷ **W. BAL (White Balance) Button**
❸ **Zooming Ring**



Auto White Balance 1

When CAMERA MODE selector is set to A (auto), auto white balance is selected automatically.
If the CAMERA MODE selector is set to M, press W. BAL button and select A (auto).

- Natural colour is achieved for both indoor and outdoor scenes.

1



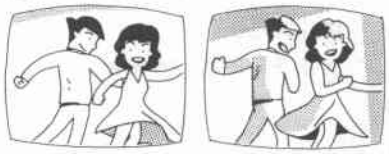
Subjects Not Suitable for Auto White Balance 2

When recording subjects not suitable for auto white balance, use white balance set.
Auto white balance is not effective in the following cases:

❹ **Situations where lighting changes suddenly** (eg. when spotlights are suddenly turned on, or moving between indoors and outdoors.)
❺ **Monocolour subjects**
❻ **Macro recording**
❼ **When recording under fluorescent, mercury-vapour or sodium-vapour lights.**

2

❹



❺



❻



❼



(Continued on p.46)

White Balance Set [3]

Use white balance set when shooting subjects that are not suitable for auto white balance.

1. **Set CAMERA MODE selector to M (manual).**
2. **Point camera lens at white object, such as a sheet of paper, so that it completely fills viewfinder.**
 - When using a zoom lens, rotate zooming ring to telephoto end.
 - Make sure sufficient lighting is available.
 - There is no need to focus.
3. **Press W. BAL button.**
 - "WB SET" flashes in viewfinder for approx. two seconds, then is displayed continuously.
 - When white balance cannot be set, "WB SET" continues to flash in viewfinder.
4. **Make recording.**
5. **Press W. BAL button again to reset auto white balance.**
 "WB SET" disappears from viewfinder.

Notes:

- White balance set has a smaller range than auto white balance. Therefore, under certain lighting conditions (when using tungsten lights, for example) white balance set may be impossible ("WB SET" continues to flash in the viewfinder).
- Reset the white balance if the light source changes during recording.
- Use white balance set even under normal lighting conditions to achieve a more precise colour balance.
- White balance cannot be set when the digital functions are being used.

Hint:

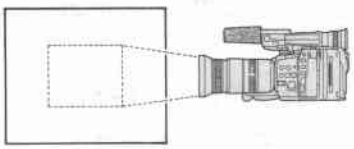
- White balance set can be used to enhance colours for a stronger effect. For the best results when shooting sunsets and other scenes with red colouring, adjust the camera by pointing it at a blue object and pressing the W. BAL button.

[3]

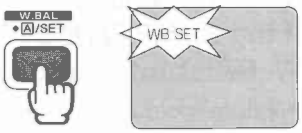
1



2



3



4



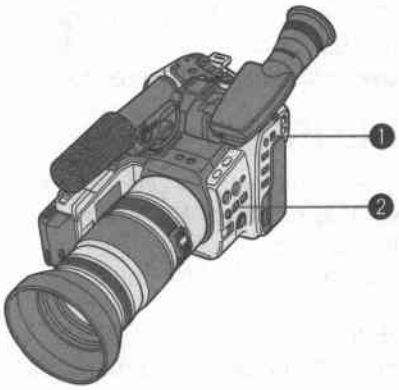
5



High-Speed Shutter

Use the high-speed shutter to capture sports and other fast action scenes clearly. With frame advance, still and slow-motion playback, the picture can be viewed without blurring. The camera has seven high-speed shutter settings: 1/120th, 1/250th, 1/500th, 1/1,000th, 1/2,000th, 1/4,000th and 1/10,000th of a second. Select the shutter speed according to the subject's speed and brightness. Normal operating speed is 1/50th of a second.

❶ **CAMERA MODE Selector**
❷ **SHUTTER Button**



1. Set CAMERA MODE selector to M (manual).

2. Press SHUTTER button.

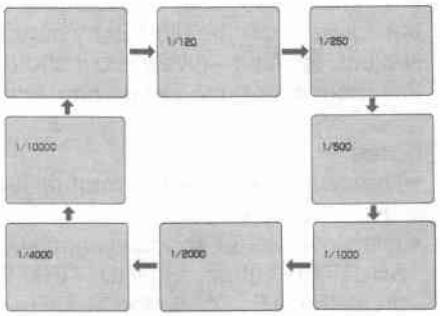
- Each time button is pressed, viewfinder display changes as shown on right.

1



2





3. Make recording.

3



4. Press SHUTTER button to return to normal shutter speed.

4



Notes:

- Use this function outdoors, in bright light.
- Scenes shot with high-speed shutter will appear somewhat jerky during normal playback.
- When a bright, shiny or light-reflecting object is shot with the high-speed shutter, smear may occur (see page 84), or the autofocus function may stop.

Digital Effects

The camera has a wide range of digital functions which you can use to add special effects to your recordings.
See pp.54-55 for the procedure for using these effects.

CLOSE-UP 1

This effect instantly produces an extra 2× magnification — it digitally enlarges the central portion of the image so that it fills the screen. This means, for example, that you can achieve a maximum of 30× magnification using a 15× zoom lens.

Notes:
- Focus manually when using CLOSE-UP.
- Resolution is slightly lower when the image is digitally enlarged.

SLOW SHUTTER 2

The camera has four slow shutter speeds which make it possible to record in low light: 1/25, 1/12, 1/8 and 1/6 sec. Select SLOW SHUTTER in the same way as the other effects, then press the D.E. ON button to change to the desired speed. Slow shutter speeds can also be used to create special effects. For example, with a slow shutter speed, the background can be blurred by panning along with a moving subject. ❶ Alternatively, slow shutter speeds can be used with the zoom in order to create after-images. ❷

Notes:
- The camera switches to manual focus when SLOW SHUTTER is selected.
- The slow shutter speed is cancelled if you press the SHUTTER button. "S.SHUTTER" flashes in the viewfinder — press the D.E. ON button again to return to the slow shutter speed.
- Slow shutter speeds cannot be used when the high-speed shutter has already been selected. You must cancel the high-speed shutter before you can change to a slow shutter speed. (If you do not first return to auto, "<S.SHUTTER>" will flash in the viewfinder.)
- Noise may become noticeable when using the SLOW SHUTTER function in low-light conditions.

1





2

❶



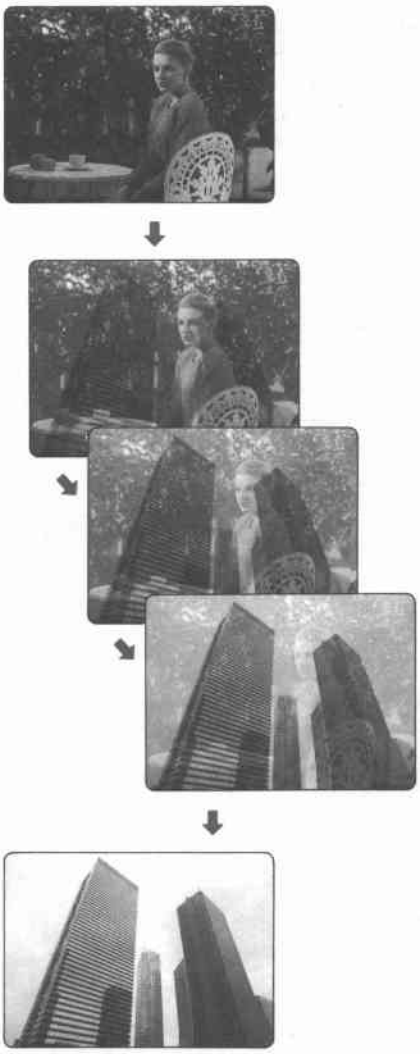
❷



OVERLAP 3

The OVERLAP function gives a dissolve effect from one scene to the next. Activate this effect before recording the first scene. When you pause and restart recording, the end of the first scene is displayed in the viewfinder as a still image and gradually dissolves into the second scene.

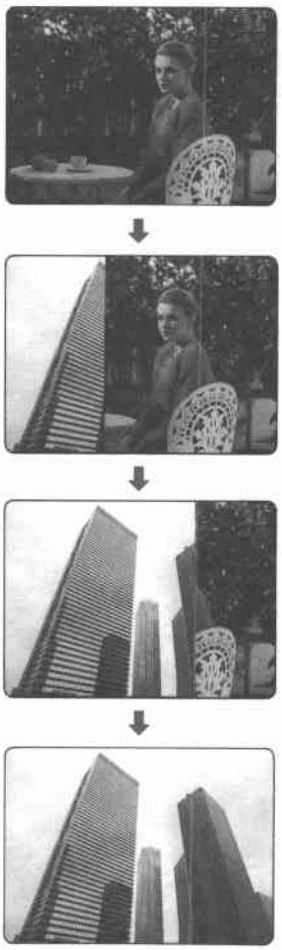
3



WIPE 4

Like the OVERLAP effect, the WIPE function must be activated while recording the first scene. When you pause and restart recording, the end of the first scene is displayed in the viewfinder as a still image which is wiped off the screen, from left to right, by the second scene.

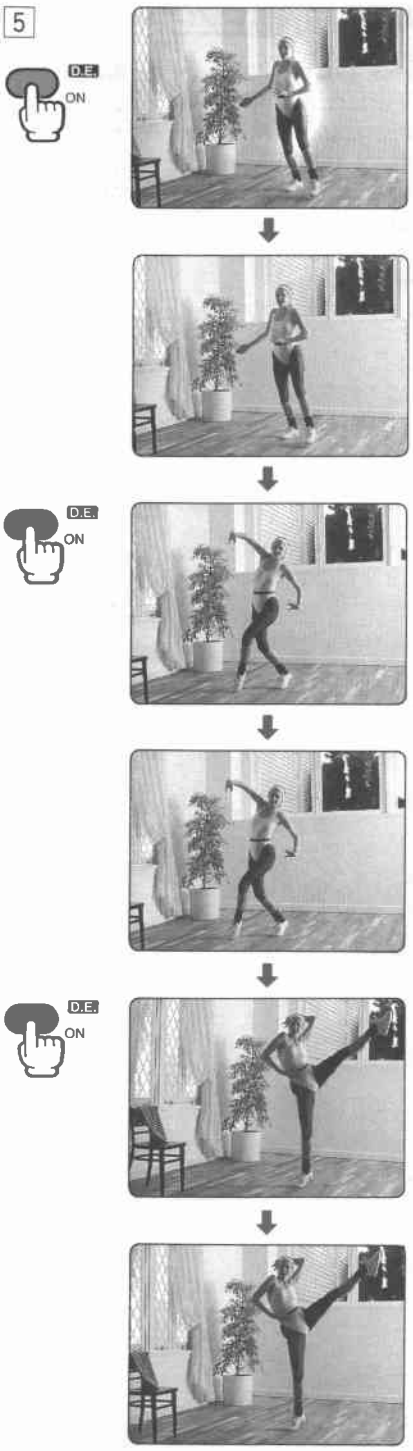
4



FREEZE 5

This function freezes the image in the viewfinder. If the D.E. ON button is pressed repeatedly, on-screen action can be shown as a series of still images. When the button is pressed and held, the image freezes for about 1/8 of a second and is then automatically replaced by a new one.

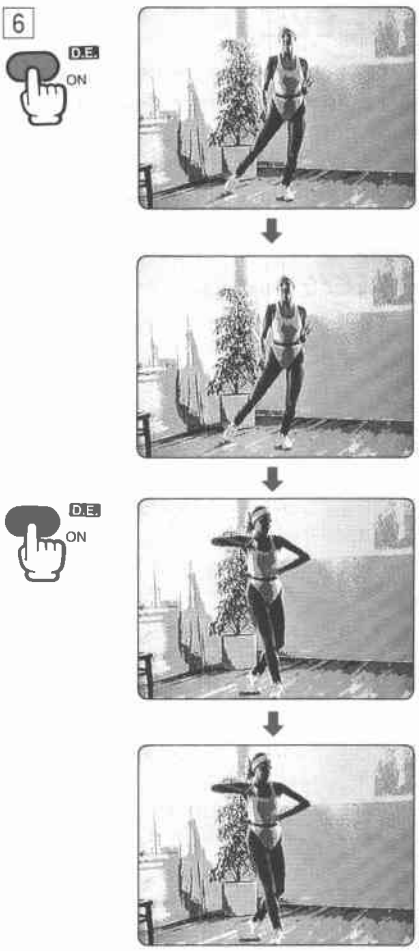
Note:
- FREEZE cannot be combined with fades.



ART FREEZE 6

This function freezes the image in the same way as the FREEZE function, but also adds a paint-like effect, called solarization. As with the FREEZE function, you can replace the image by pressing the D.E. ON button repeatedly, or hold down the button for a constant 1/8 of a second replacement rate.

Note:
- ART FREEZE cannot be combined with fades.



SPLIT 7

This function divides the screen in half down the middle. The left half continues moving, but the right half is frozen at the point where you pressed the D.E. ON button. As with the FREEZE effect, the still image can be replaced by pressing or holding down the button.

7





CINEMA 8

The CINEMA effect records an image with the same proportions as a cinema screen. The top and bottom of the screen are black, giving the effect of a film being broadcast on TV in the 'letterbox' format.

8



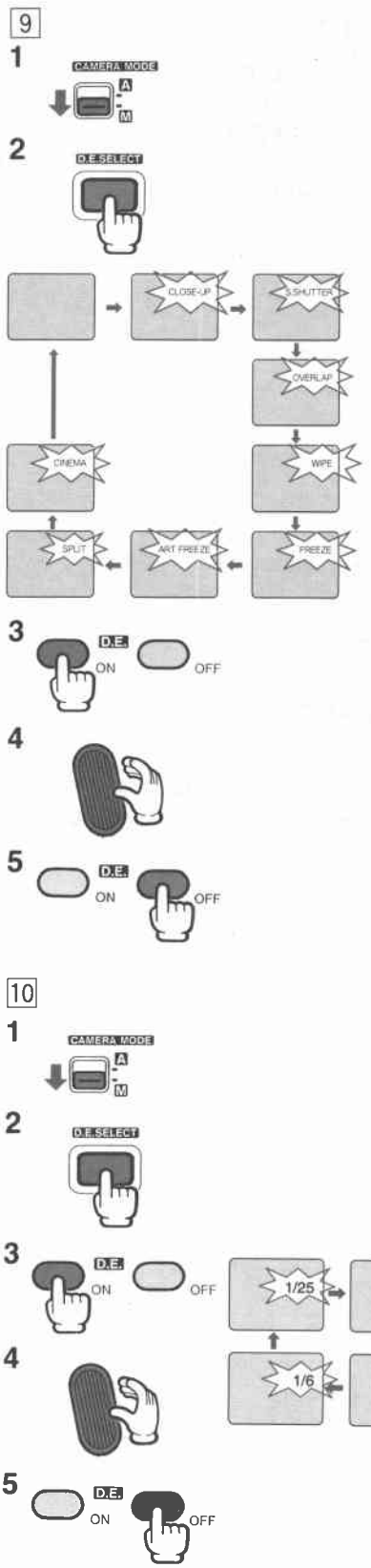
Using CLOSE-UP, FREEZE, ART FREEZE, SPLIT and CINEMA [9]

1. **Place camera in record pause mode and set CAMERA MODE selector to M (manual).**
2. **Press D.E. SELECT button to select desired digital effect.**
 - Each time you press the button, the flashing viewfinder display changes as shown.
3. **Press D.E. ON button to activate digital effect.**
 - The viewfinder display stops flashing and remains steady.
4. **Record.**
 - Of course it is also possible to reverse steps 3 and 4, and start recording before activating the desired effect.
5. **Press D.E. OFF button to cancel digital effect.**
 - The display starts flashing again — you can now select a different effect.

Using SLOW SHUTTER [10]

1. **Place camera in record pause mode and set CAMERA MODE selector to M (manual).**
2. **Press D.E. SELECT button to select SLOW SHUTTER.**
 - Each time you press the D.E. SELECT button, the flashing viewfinder display changes as shown in [9] above.
3. **Press D.E. ON button to change shutter speed.**
 - The digital effect display disappears, and the shutter speed display appears instead. It changes as shown each time you press the D.E. ON button.
4. **Record.**
 - Of course it is also possible to reverse steps 3 and 4, and start recording before changing the shutter speed.
5. **Press D.E. OFF button to cancel SLOW SHUTTER.**
 - The digital effect display starts flashing again — you can now select a different effect.

[9]



[10]

Using OVERLAP and WIPE [11]

1. **Place camera in record pause mode and set CAMERA MODE selector to M (manual).**

2. **Press D.E. SELECT button to select OVERLAP or WIPE.**
 - Each time you press the button, the flashing viewfinder display changes as shown.

3. **Press D.E. ON button to activate digital effect.**
 - The viewfinder display stops flashing and remains steady.

4. **Start recording.**

5. **Pause recording.**

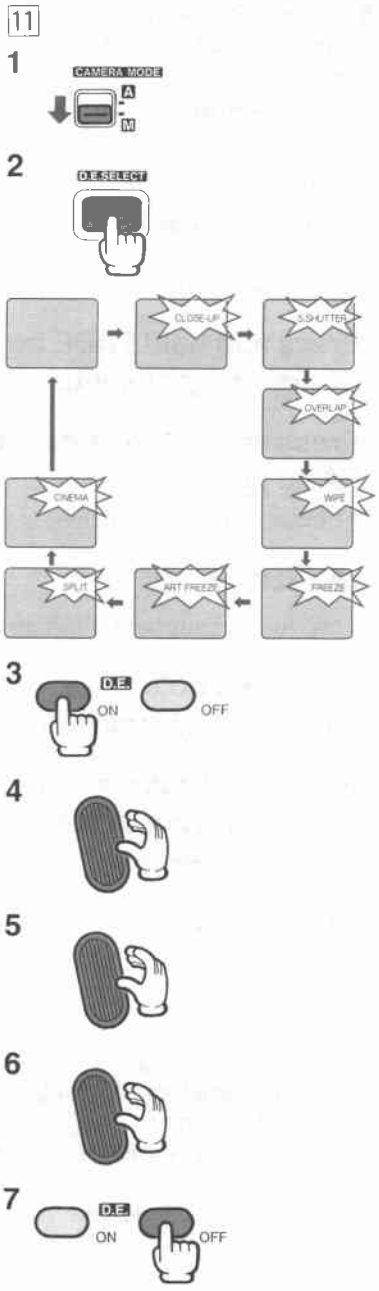
6. **Restart recording.**
 - The first scene reappears in the viewfinder, and is replaced by the second with an overlap or wipe effect.
 - The effect is repeated each time you pause and restart recording.

7. **Press D.E. OFF button to cancel digital effect.**
 - The display starts flashing again — you can now select a different effect.

Note:
- All digital effect settings are cancelled if the camera is turned off or if the CAMERA MODE selector is set to A.

Hint:
- If you press the D.E. ON button between steps 5 and 6, you can see a preview of the effect before you start recording.

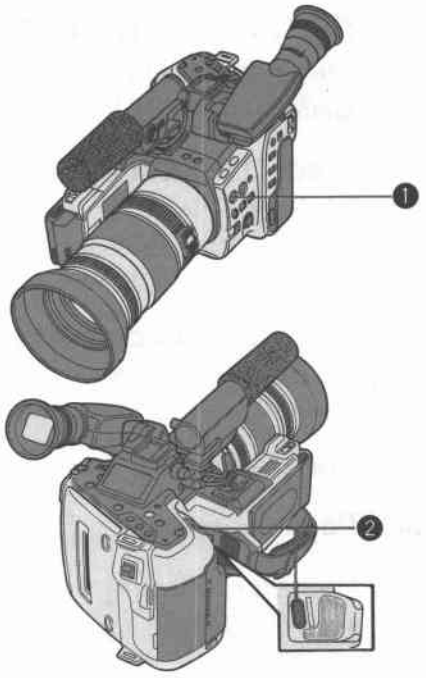
[11]



Fade

Use the fade effect to make scenes gradually appear or disappear in smooth transition.

❶ **FADE Button**
❷ **Start/Stop Buttons**



Fade In [1]

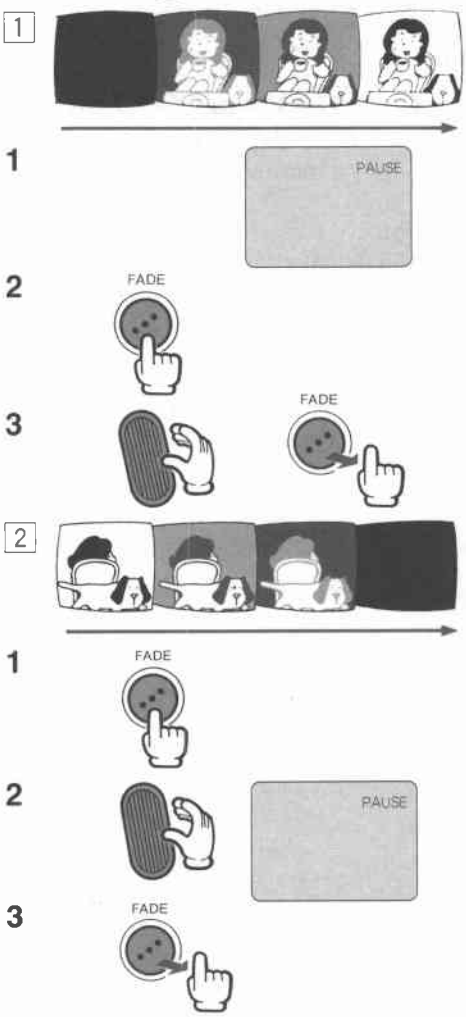
Scene gradually appears from a blank screen.

1. **Place camera in record pause mode.**
2. **Press and hold FADE button until scene disappears completely from viewfinder.**
3. **Press start/stop button and then release FADE button.**
 - Scene gradually fades in.

Fade Out [2]

Scene gradually disappears, fading to a blank screen.

1. **Press and hold FADE button during recording.**
 - Scene gradually fades out.
2. **Press start/stop button when scene disappears completely.**
 - Camera enters record pause mode.
3. **Release FADE button.**



Notes:

- The sound fades along with the image
- The title, date and time do not fade.
- The fade effect can be used not only at the start or end of a scene, but also while recording is in progress.
- The fade effect cannot be used when the FREEZE or ART FREEZE function is selected.

Adding Titles to Recordings

With this camera, titles can be created and stored, then superimposed on recordings.
Titles may be one or two lines of up to 16 characters each.

❶ **TITLE Button**
❷ **Start/Stop Buttons**
❸ **TITLE/DATE Button**
❹ **+/− Buttons**
❺ **SHIFT Button**
❻ **Operate Button**



Creating Titles [1]

Remember to create the title before starting to record.

1. Turn camera on.
- OPERATE/CAUTION indicator lights up.

2. Press TITLE/DATE button to display title lines in viewfinder.
- Flashing dot or character indicates position of cursor.

3. Press SHIFT button to move cursor to position where title will begin.
- Each time SHIFT button is pressed, cursor moves one space to right. When button is pressed and held, cursor moves continuously.
- Cursor does not move backwards.

4. Use (+) and (−) buttons to scan list of title characters.
- Press (+) button to scan forward through list.
- Press (−) button to scan list in reverse order.
- Press button once to scan characters one at a time.
- Press and hold to scan characters quickly.

Title Characters List

→ABCDEFGHIJKLMNOPQRSTUVWXYZÄÖÜØÀÆÑÇË→
→□&✱!?;:"'-/.,9876543210□→

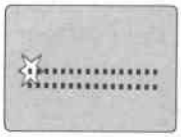
- Space character □ appears between & and A, and between Ë and 0. If □ is selected, flashing dot appears in viewfinder, but space appears during actual recording and playback.
- Press both (+) and (−) buttons simultaneously to erase all characters at and to right of cursor.

5. When desired character is displayed, press SHIFT button again to move cursor to next position.

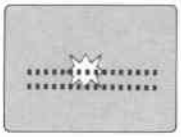
[1]

1


2

3

4


5


6. **Repeat steps four and five until title is complete.**

7. **When title is finished, press TITLE/DATE button.**
 - Title is saved in camera's memory.
 - Press TITLE button to make title disappear from viewfinder.

Recording Titles [2]

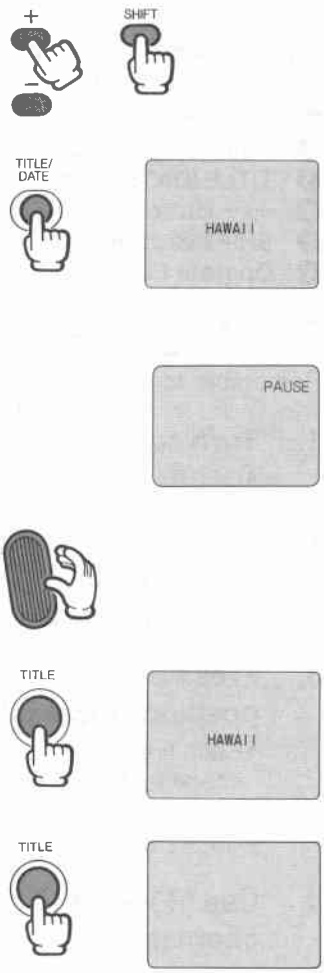
1. **Place camera in record pause mode.**

2. **Press start/stop button to start recording.**

3. **Press TITLE button.**
 - Title appears in viewfinder, and will be recorded with scene.

4. **Press TITLE button again to end title recording.**
 - Title disappears from viewfinder and recording continues.

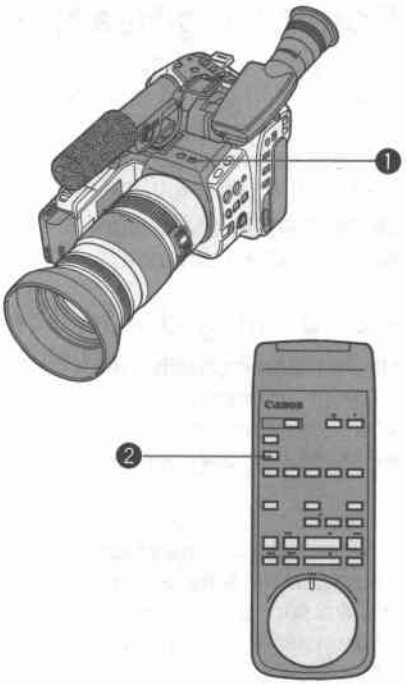
Notes:
- Titles cannot be created during recording.
- Titles cannot be created or superimposed during line-in or playback modes.
- When replacing the lithium battery, make sure that a power source is attached to the camera. Otherwise, the title and date settings will be erased, and will need to be reset.



Recording Date and Time

The date and time can be recorded separately or together, and with or without the title. For instructions on how to set the date and time, see page 12.

❶ **DATE Button**
❷ **DATE Button**



1. Place camera in record pause mode.

2. Press DATE button to select display for recording.

- Each time button is pressed, display changes as shown on right. ❸

3. Make recording.

- Date and/or time will be recorded with scene.

Notes:

- Date and time cannot be recorded during line-in mode.
- When the lithium battery is nearly exhausted, "DATE BATT" flashes in the viewfinder. Change the battery (see page 10). When replacing the lithium battery, make sure that a power source is attached to the camera. Otherwise, the title and date settings will be erased, and will need to be reset.

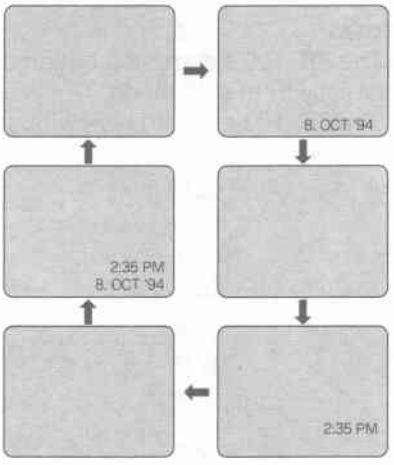
1



2



❸



3



PHONES Terminal/Recording Using a Tripod

Connecting Headphones 1

Connect commercially available stereo headphones to the PHONES terminal to monitor the stereo sound.

- Monitoring is only possible when the camera is in record or record pause mode.
- Adjust the volume using the PHONES LEVEL controller.

❶ **PHONES LEVEL Controller**
❷ **PHONES Terminal**

Recording Using Tripod 2

Use a tripod if possible in the following cases:

- Telephoto recording
- Macro recording
- Recording using the wireless controller

Notes:

- When using a lens which has a tripod socket, attach the tripod to the lens, rather than the camera.
- Make sure to protect the viewfinder from direct sunlight, otherwise the viewfinder will melt. (The light is concentrated by the dioptre lens.)

Using the ZR-100 Zoom Remote Controller (Option) 3

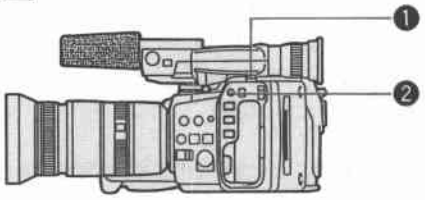
The optional ZR-100 Zoom Remote Controller can be used to control recording start/stop, the zoom functions, and the record search functions while the camera is mounted on a tripod. The ZR-100 is connected to the ⏻ REMOTE terminal, and mounted on the tripod panning lever, so the above functions can be operated without shaking the camera. For details, refer to the instructions provided with the ZR-100.

❸ ⏻ **REMOTE Terminal**

Notes:

- The ZR-100's start/stop button allows you to start recording directly from stop mode.
- The ZR-100's record review button does not operate with the EX2Hi.

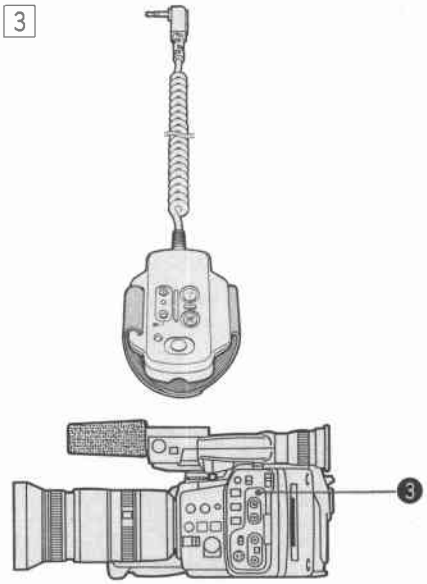
1



2



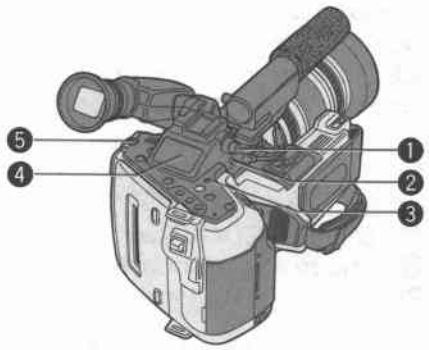
3

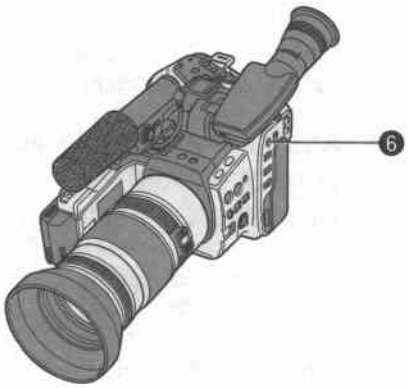


Recording Level Adjustment

This camera has two separate recording level adjustment settings: auto and manual. When using the auto recording level adjustment setting, the recording level is automatically adjusted to the correct level. When using the manual recording level adjustment setting, the left and right recording levels can be adjusted manually. In normal recording situations, select auto recording level adjustment.

❶ **REC LEVEL Controller**
❷ **ATT (Attenuator) Switch**
❸ **MIC LEVEL A/M Button**
❹ **LCD Display**
❺ **PHONES LEVEL Controller**
❻ **PHONES Terminal**





Adjusting Recording Level Manually [1]

1. **Press MIC LEVEL A/M button and select M (manual).**
 • MANU appears in LCD display.

2. **Point camera at subject and adjust audio level with REC LEVEL controller.**
 • If recorded sound level shown on audio level display rises above ◀ mark, sound may be distorted.

3. **After recording level is adjusted, begin recording.**

ATT (Attenuator) Switch Setting [2]

When recording at racing circuits, airports, stations and other loud places, set ATT switch to 20 dB (▬). This will provide a more natural sound without distortion.

Notes:
- It is best not to adjust the recording level during recording. If this cannot be avoided, turn the controller slowly and smoothly.
- Use the PHONES LEVEL controller to adjust the sound level during monitoring.
- Normally, set the ATT switch to off (▮).
- Do not change the setting of the ATT switch during recording.
- If the ATT switch is set to the 20 dB position because of a high sound level, be sure to reset it to off when recording is completed.

[1]

1



2





3



[2]



Stereo/Zoom Microphone

The external stereo/zoom microphone offers two functions: stereo and zoom. When using the stereo function, you can adjust the angle of sound recording. When using the zoom function, you can adjust recording sensitivity in order to record nearby or far off sounds.

- For information on how to connect the microphone to the video camera, see page 6.

❶ **STEREO/ZOOM Switch**
❷ **Stereo Angle/Zoom Sensitivity Controller**
❸ **Start/Stop Buttons**

1. Set STEREO/ZOOM switch to STEREO or ZOOM.

- When the STEREO/ZOOM switch is set to ZOOM, sound will be input in monaural.

2. Adjust stereo angle/zoom sensitivity controller.

When STEREO is selected:

- Turn controller towards "90°" to record sound from centre area of screen.
- Turn controller towards "150°" to record sound from a wide area.

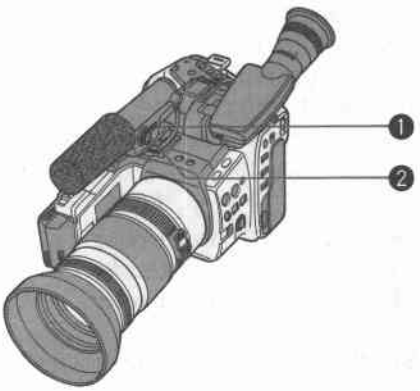
When ZOOM is selected:

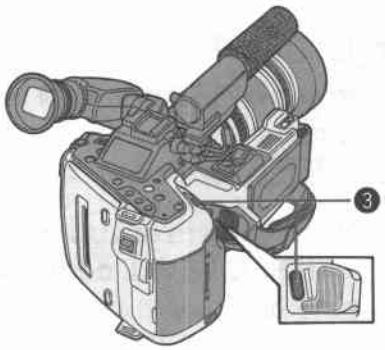
- Turn controller towards "TELE" to record sound of faraway subjects.
- Turn controller towards "WIDE" to record sound of nearby subjects.

3. Press start/stop button to start recording.

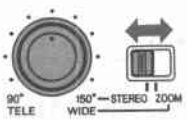
Notes:

- Set the STEREO/ZOOM switch and stereo angle/zoom sensitivity controller before beginning to record. If they are adjusted during recording, operating noise will be recorded.
- Attach commercially available headphones to the PHONES terminal to check the sound characteristics and adjust them to match the video image. This makes the recording more effective.
- When monitoring sound with headphones, set the PHONES LEVEL controller to a moderate sound level.

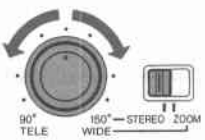




1



2



3



Data Code

Date Index 1

Unlike the usual date and time display which can be permanently superimposed on recordings, the date index is automatically recorded on the tape's data area and can be displayed or hidden as desired during playback. See p.93 for further information about data code.

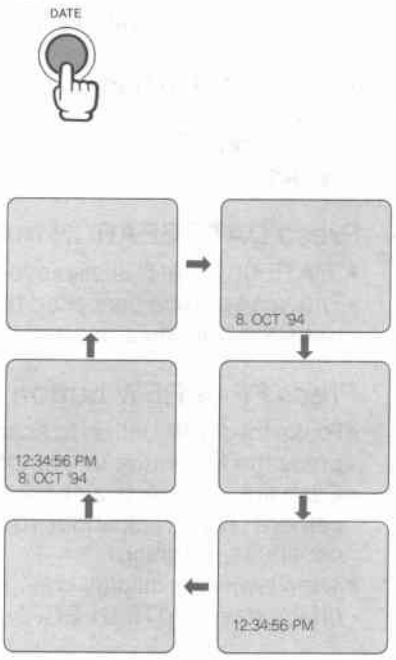
If the DATE button is pressed in stop, fast forward, rewind, play or still modes, the date index is displayed in the viewfinder. The display changes as shown each time the DATE button is pressed.

In stop, fast forward and rewind modes, both the date index and the actual date/time are displayed.

Notes:

- The date index is added to the tape during line-in recording as well as camera recording.
- The data code display will read "--- -- ---" in the following situations:
 - During playback of a blank section of tape.
 - If the tape was recorded before entering the date and time in the camera's memory.
 - If RC Time Code (p.69) was added to the tape after recording.
 - If the tape was recorded on a camcorder without a data code function.
 - If noise or tape damage prevents the data code from being read.
- Data code may not be correctly displayed during record review or record search in reverse.

1



Date Scan [2]

This function can be operated in play and still modes.

❶ **DATE SEARCH Button**
❷ **FF Button**
❸ **PLAY Button**
❹ **REW Button**

1. Press DATE SEARCH button once.

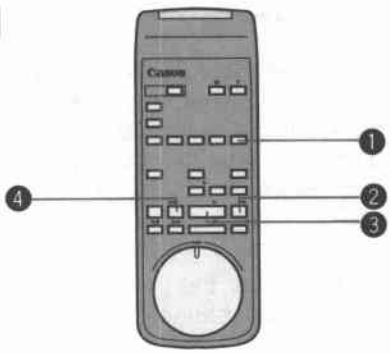
- "DATE 00 SCAN" is displayed in the viewfinder.
- The scan can be cancelled by pressing any of the tape transport buttons other than FF or REW.

2. Press FF or REW button to begin scan.

- Press the REW button to scan for earlier recordings; press the FF button to scan for later recordings.
- Each time it detects a change in the date index, the camera plays back about 10 seconds and then continues scanning.
- The viewfinder display changes as the camera counts off the days: DATE 01 SCAN, DATE 02 SCAN, etc.

3. Press PLAY button when desired date is located.

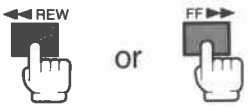
[2]



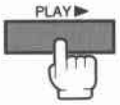
1



2



3



Date Search [3]

This function can be operated in play and still modes.

1. Press DATE SEARCH button repeatedly to select date of recording to be located.

- The camera will locate the desired recording by counting the number of days when recordings were made on the tape. It starts at the current tape position and stops when it has detected the specified number of changes in the date index. Each time you press the DATE SEARCH button, the viewfinder display changes: DATE 00 SCAN, DATE 01 SEARCH, DATE 02 SEARCH, etc.
- The search can be cancelled by pressing any of the tape transport buttons other than FF or REW.

2. Press FF or REW button to begin search.

- Press the REW button to search for earlier recordings; press the FF button to search for later recordings.
- The viewfinder display counts down towards "DATE 00 SEARCH."

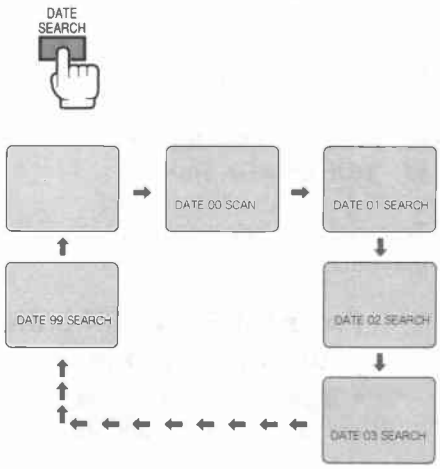
3. Playback starts automatically when desired date is located.

Notes:

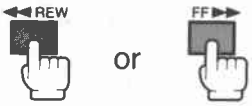
- A date cannot be identified if the total recording time on that day was less than two minutes.
- Date scan/search playback may start just before or after the beginning of the located section.
- A maximum of 99 days can be scanned or searched at one time.
- PCM dubbing on an 8mm VCR may cause the data code on that section of the tape to be erased.

[3]

1



2



Index Code

Marking Index Signals [1]

Index signals can be marked on the tape during recording or playback. These signals can then be located using index search or index scan. It is also possible to erase the signals. Make sure the cassette is not set for erasure prevention.

❶ **INDEX MARK Button**
❷ **INDEX MARK Button**

To record an index signal at the beginning of recording or playback:

1. Press INDEX MARK button while in record pause or still mode.

- "INDEX" appears in the viewfinder and "MARK" flashes in the viewfinder and the LCD display.

2. Start recording or playback.

- "MARK" stops flashing and appears steadily for about 10 seconds.
- The index signal is recorded on the tape.

To record an index signal after recording or playback has started:

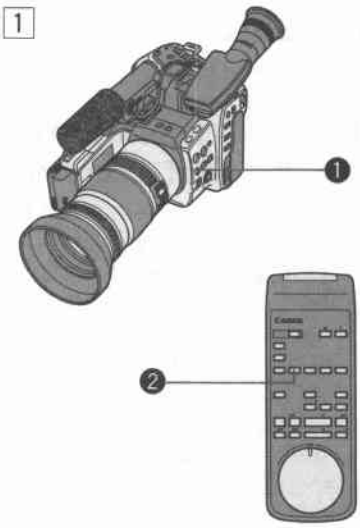
Press INDEX MARK button.

- "INDEX MARK" is displayed in the viewfinder and "MARK" appears in the LCD display for about 10 seconds.
- The index signal is recorded on the tape.

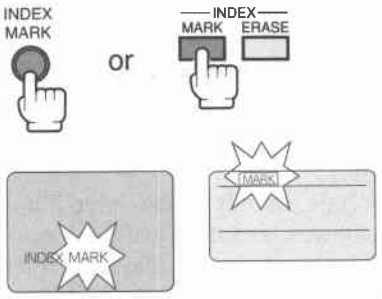
Notes:

- Index signals cannot be marked on a cassette which has been set for erasure prevention.
- Leave an interval of at least two minutes between index signals. A shorter interval may not allow the signals to be located.
- Do not pause recording or playback while "MARK" is displayed steadily in the viewfinder.
- When an index signal is marked on the tape, any data code already recorded at that point is erased. During playback of this section, the last recorded date/time data is displayed continuously. If the data code is missing for more than 30 seconds, "--- -- ---" will be displayed instead.
- When an index signal is marked on the tape during playback, the sound is muted and a black band appears across the lower half of the screen. This is not a malfunction and it has no effect on the recording.

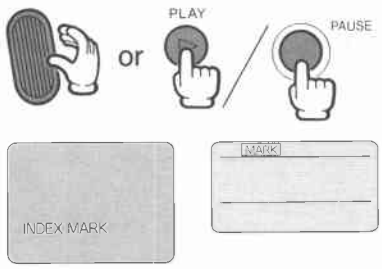
[1]



1



2



Index Scan [2]

This function can be operated in stop, play and still modes. If it is operated in play or still mode, the image can be monitored in the viewfinder (and on a connected TV) throughout the scan.

❶ INDEX Button

1. Press INDEX button once.

- "INDEX 00 SCAN" is displayed in the viewfinder.
- The scan can be cancelled by pressing any of the tape transport buttons other than FF or REW.

2. Press FF or REW button to begin scan.

- Press the REW button to scan for earlier recordings; press the FF button to scan for later recordings.
- Each time it detects an index signal, the camera plays back about 10 seconds and then continues scanning.
- The viewfinder display changes as the camera counts off the index signals: INDEX 01 SCAN, INDEX 02 SCAN, etc.

3. Press PLAY button when desired playback point is located.

Index Search [3]

This function can be operated in stop, play and still modes. If it is operated in play or still mode, the image can be monitored in the viewfinder (and on a connected TV) throughout the search.

1. Press INDEX button repeatedly to select index signal to be located.

- The camera will locate the desired recording by counting the number of index signals between the current tape position and the desired recording. Each time you press the INDEX button, the viewfinder display changes: INDEX 00 SCAN, INDEX 01 SEARCH, INDEX 02 SEARCH, etc.
- The search can be cancelled by pressing any of the tape transport buttons other than FF or REW.

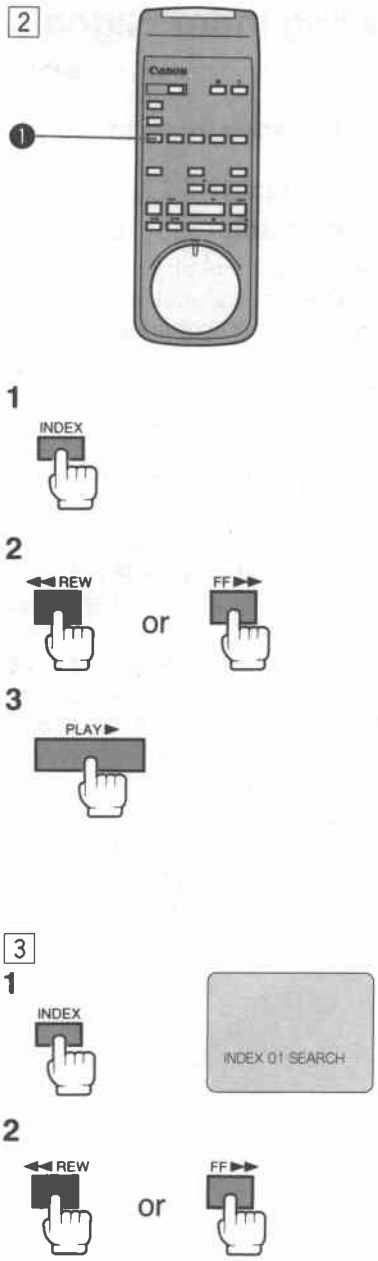
2. Press FF or REW button to begin search.

- Press the REW button to search for earlier recordings; press the FF button to search for later recordings.
- The viewfinder display counts down towards "INDEX 00 SEARCH."

3. Playback starts automatically when desired point is located.

Note:

- Up to 99 index signals can be scanned or searched at one time.



Erasing Index Signals [4]

Make sure the cassette is not set for erasure prevention.

1. Use index scan to locate signal to be erased.

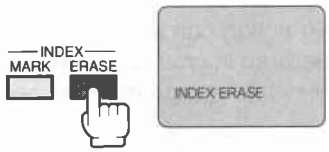
2. Press INDEX ERASE button after 2 seconds of index scan playback.

- "INDEX ERASE" appears in the viewfinder.
- The index signal is erased.
- Index scan continues.

Notes:

- Index signals cannot be erased from a tape that has been set for erasure prevention.
- When a signal is erased, the sound is muted and a black band appears across the lower half of the screen. This is not a malfunction, and it has no effect on the recording.
- Time code and data code are erased from the tape at the point where the index signal is erased. During playback, the time code display will read "-:--:--:--" and the data code display will read "--- -- ---." In order to use the time code during editing, you will first have to add it to this section.
- Index signals marked on the tape using another 8mm camcorder or VCR can be located by the EX2Hi. However, they cannot always be erased. Similarly, when playing back tapes on another camcorder or VCR, signals recorded by the EX2Hi can be located, but not always erased.
- PCM dubbing on an 8mm VCR may cause the index signals from that section of the tape to be erased.

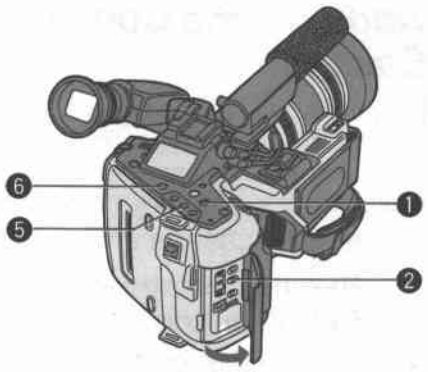
[4]
2



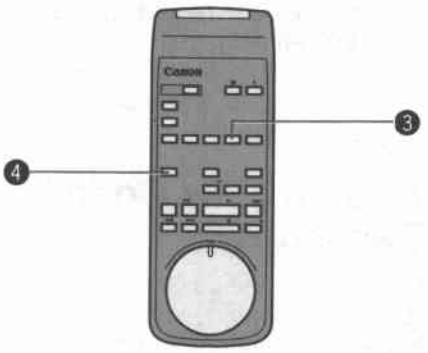
RC Time Code

Unlike a conventional tape counter, which keeps track of the approximate running time of the tape in hours, minutes and seconds, the Rewritable Consumer Time Code is automatically recorded on the tape, and precisely identifies each individual frame of the recording, by hour, minute, second and frame. This means that an RCTC-compatible edit controller with a LANC terminal can be used to produce frame-accurate edits.

Time code is recorded continuously when recording is stopped and restarted, as long as there is no blank section between the two sections. Time code can also be added to a previously recorded cassette.



1. **PAUSE Button**
2. **COUNTER/TC Button**
3. **TIME CODE INSERT Button**
4. **ON SCREEN Button**
5. **PLAY Button**
6. **STOP Button**



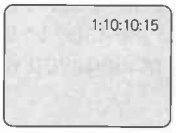
Displaying Time Code 1

Press the COUNTER/TC button to see the time code in the viewfinder and LCD display during recording or playback. The time code can then be displayed on a connected TV screen by pressing the wireless controller's ON SCREEN button.

Notes:

- Tape return and counter reset functions cannot be operated while the time code is displayed.
- The time code display will read "-:--:--:--" in the following situations:
- During playback of a blank section of tape.
- If an index signal has been erased, causing the time code to be erased as well.
- If the tape was recorded on a camcorder without a time code function.
- If noise or tape damage prevents the time code from being read.







Adding Time Code to a Recorded Cassette 2

It is possible to add the time code to a cassette after recording, whether the original recording was made on the EX2Hi, or on another 8mm camcorder or VCR.
Make sure the cassette is not set for erasure prevention.

1. **Insert cassette and press STOP button.**
2. **Rewind cassette and press PLAY and then PAUSE button.**
3. **Press TIME CODE INSERT button.**
 - "TC" appears in the viewfinder and "INSERT" flashes.
4. **Press PLAY or PAUSE button to begin playback.**
 - "INSERT" stops flashing and appears steadily.
 - Time code recording begins from 0:00:00:00.
 - When the tape reaches the end, it rewinds to the beginning and then stops.
 - Time code insert can be cancelled by pressing the STOP button.

Adding Time Code to a Section of the Cassette 3

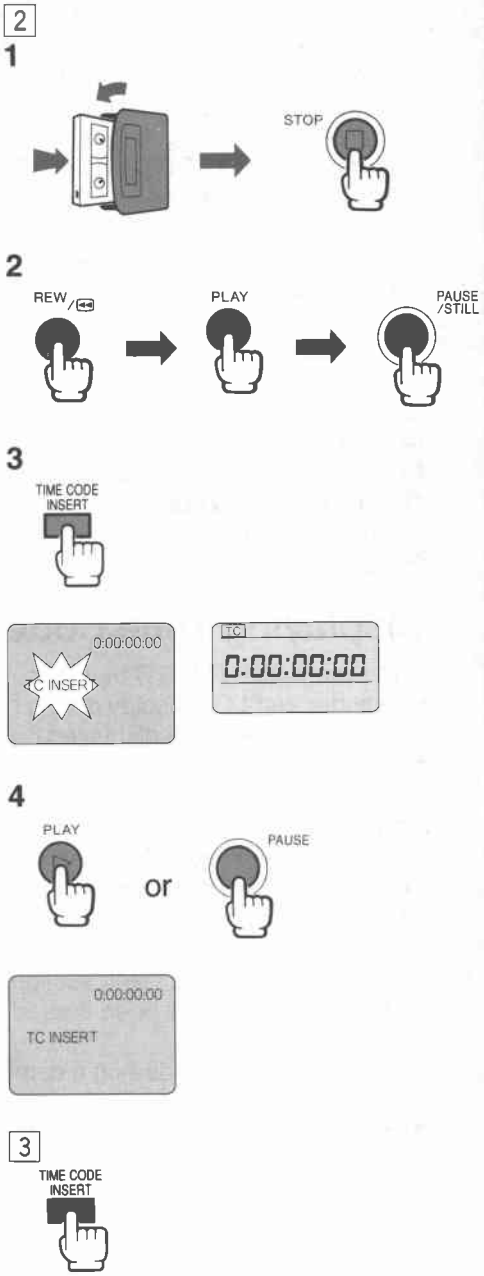
When part of the cassette already has time code, but the following section does not, the time code can be added so that it will run continuously from one section to the next.
Pause the tape in the section already recorded with time code, press the TIME CODE INSERT button and start playback.

Notes:

- Time code cannot be added to a cassette which is set for erasure prevention.
- The time code will be recorded starting from a point just before the one currently displayed on the screen.
- Time code recording is cancelled in the following situations:
 - If the TIME CODE INSERT button is pressed again before playback begins.
 - If the INDEX button is pressed before playback begins.
 - If the camera is placed in any mode other than playback mode.
- PCM dubbing on an 8mm VCR may cause the time code on the dubbed section of the tape to be erased. In order to use the time code during editing, you will first have to add it to this section.

Hint:

- Before editing, make sure that the time code is correctly recorded from beginning to end. If not, it is recommended to add it before you start editing, but remember that this will in turn erase the data code and any index signals that have been marked on the tape.



Editing to Another VCR

This camera can also be used as a playback VCR, to edit recordings with the help of a second VCR.

Connection Procedure

The camera, DC-100 DC Coupler and CA-100 Compact Power Adapter (or CB-110 Car Battery Adapter) are needed for playback.

See page 23 "Playback Connection" for connection procedure.

Note:

- Both the image and the sound quality of the edited tape will be somewhat less than that of the original.

Editing Procedure [1]

Preparations

■ TV

Turn TV on and set TV to video channel, or set TV/VIDEO selector to VIDEO.

■ VCR

Turn on second VCR and load a recordable video cassette. See VCR instruction manual for details.

■ Camera

Turn camera on and load video cassette for playback. Press STOP button. Set EDIT switch to ON.

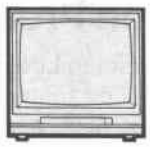
❶ **EDIT Switch**

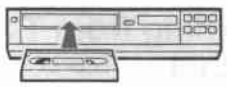
1. **On camera, locate point on video cassette slightly ahead of desired editing start point.**
2. **Place second VCR in record pause mode.**
3. **Press PLAY button of camera.**
 - Playback picture can be monitored on TV.
4. **Release pause on second VCR when scene to be recorded appears.**
 - Playback picture is recorded on second VCR.
5. **Press STOP buttons on camera and second VCR to end editing.**

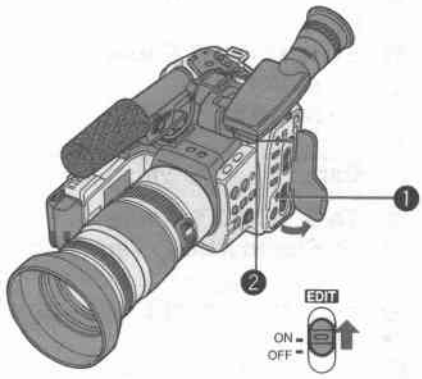
EDIT Switch

To minimize the loss of picture quality, set the EDIT switch to ON only when the camera is used as a playback VCR during editing. Normally, keep the EDIT switch set to OFF.

[1]







1 

2 

3 

4 

5 

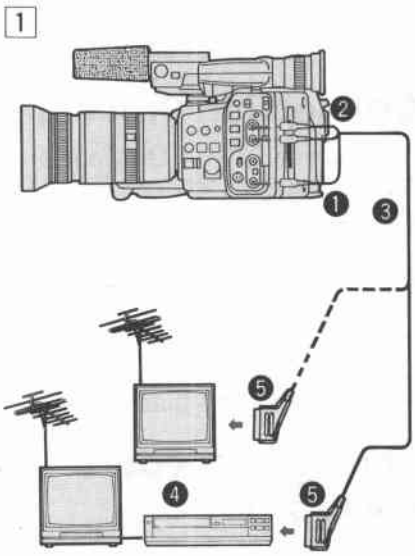
Recording from TV or Another VCR

Connection Procedure

If the camera is set to LINE IN, it can be used like a VCR to record from a TV or another VCR.
Use a TV with SCART, audio/video or S-video output terminals.

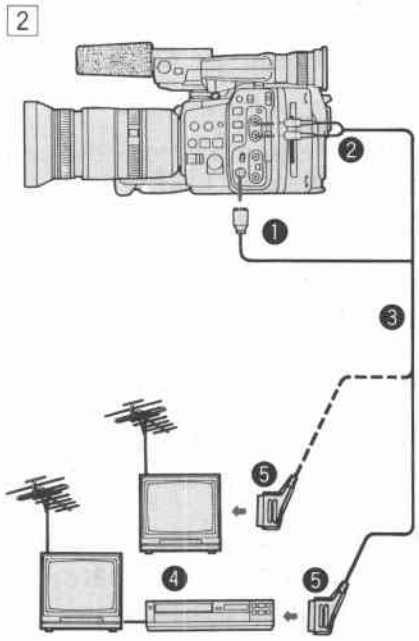
Recording from TV/VCR with SCART Terminal Stereo 1

❶ To Video Terminal (Ⓥ yellow)
❷ To Stereo AUDIO Terminals (Ⓛ white = left; Ⓡ red = right)
❸ Stereo SCART Cable
❹ TV or VCR
❺ To SCART Terminal



Stereo S-video 2

❶ To S-VIDEO Terminal
❷ To Stereo AUDIO Terminals (Ⓛ white = left; Ⓡ red = right)
❸ S-video Stereo SCART Cable
❹ TV or VCR
❺ To SCART Terminal



Note:
- Canon SCART cables (PC-150, PC-170ST and PC-270ST) can only be used for signal output. Use a commercially available SCART input cable for line-in recording.

Using TV/VCR with S-video Output Terminal Stereo S-video 3

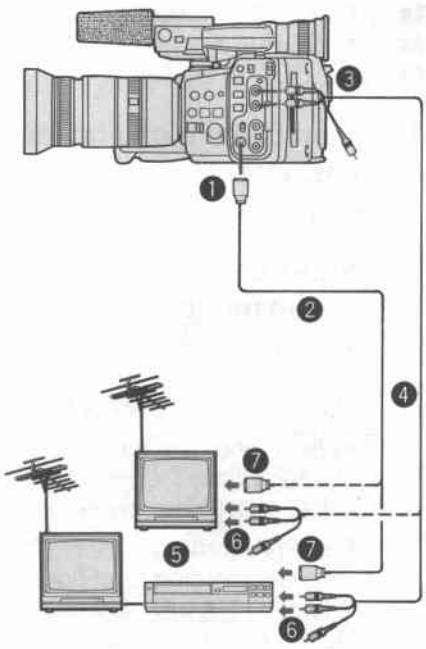
❶ To S-VIDEO Terminal
❷ S-150 S-video Cable
❸ To Stereo AUDIO Terminals (Ⓛ white = left; Ⓡ red = right)
❹ ST-150 Stereo Cable (or STV-150 Stereo Video Cable) (white = left; red = right; yellow plugs on STV-150 are not used)
❺ TV or VCR
❻ To S-video Output Terminal
❼ To Stereo Audio Output Terminals

Using TV/VCR with Audio/Video Output Terminals Stereo 4

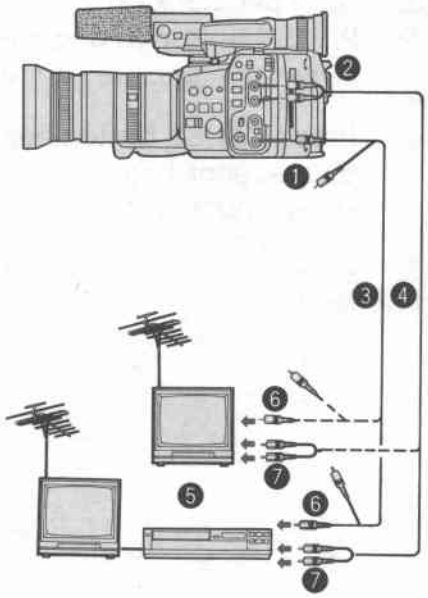
❶ To Video Terminal (Ⓥ yellow)
❷ To Stereo AUDIO Terminals (Ⓛ white = left; Ⓡ red = right)
❸ C-150 AV Cable (yellow = video; other plug is not used)*
❹ ST-150 Stereo Cable (white = left; red = right)*
❺ TV or VCR
❻ To Video Output Terminal
❼ To Stereo Audio Output Terminals

* Where available, the STV-150 Stereo Video Cable can be used instead of the C-150 and ST-150 (white = left; red = right; yellow = video).

3



4



Recording Procedure [4]

❶ **REC LEVEL Controller**
❷ **PAUSE Button**
❸ **LINE OUT/IN Button**

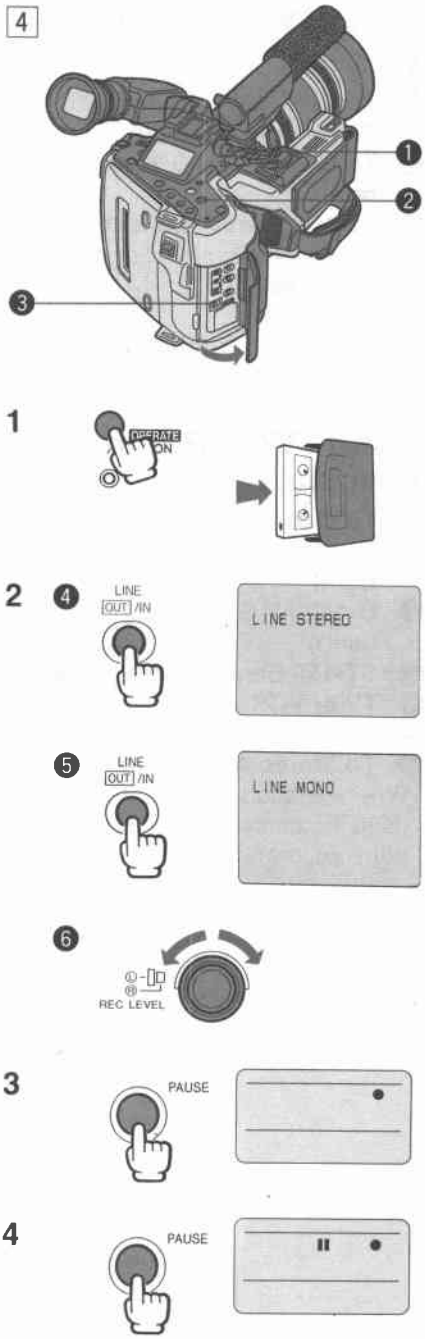
1. **Turn camera on and load a recordable video cassette.**
 - Camera enters record pause mode.

2. **Press camera LINE OUT/IN button to select line-in mode.**
 - When recording in stereo, press LINE OUT/IN button once.
 LINE STEREO display appears in viewfinder. ❹
 - When recording monaural sound, press LINE OUT/IN button twice.
 LINE MONO display appears in viewfinder. ❺

 Stereo recording
 Manual recording level adjustment is automatically selected (MANU appears in LCD display). Use REC LEVEL controller to adjust recording level. ❻
 - If recording sound level shown on audio level display rises above ◀ mark, sound may be distorted.

3. **Start playback on VCR and press camera PAUSE button to begin recording.**
 - When recording from TV, first select desired channel.

4. **Press PAUSE button again to temporarily pause recording.**
 - Press PAUSE/STILL button once more to resume recording.
 - Press STOP buttons on camera and second VCR to end recording.



REMOTE Terminal [5]

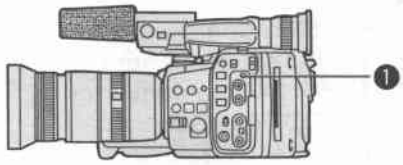
LANC stands for Local Application Control Bus System. The LANC REMOTE terminal allows you to connect the camera to other equipment, such as the VE-100 Video Editor. Some buttons on other editing equipment may operate differently from those on the camera.
The EX2Hi is also compatible with the fine synchro edit function available on some video equipment.

❶ **REMOTE Terminal**

Notes:

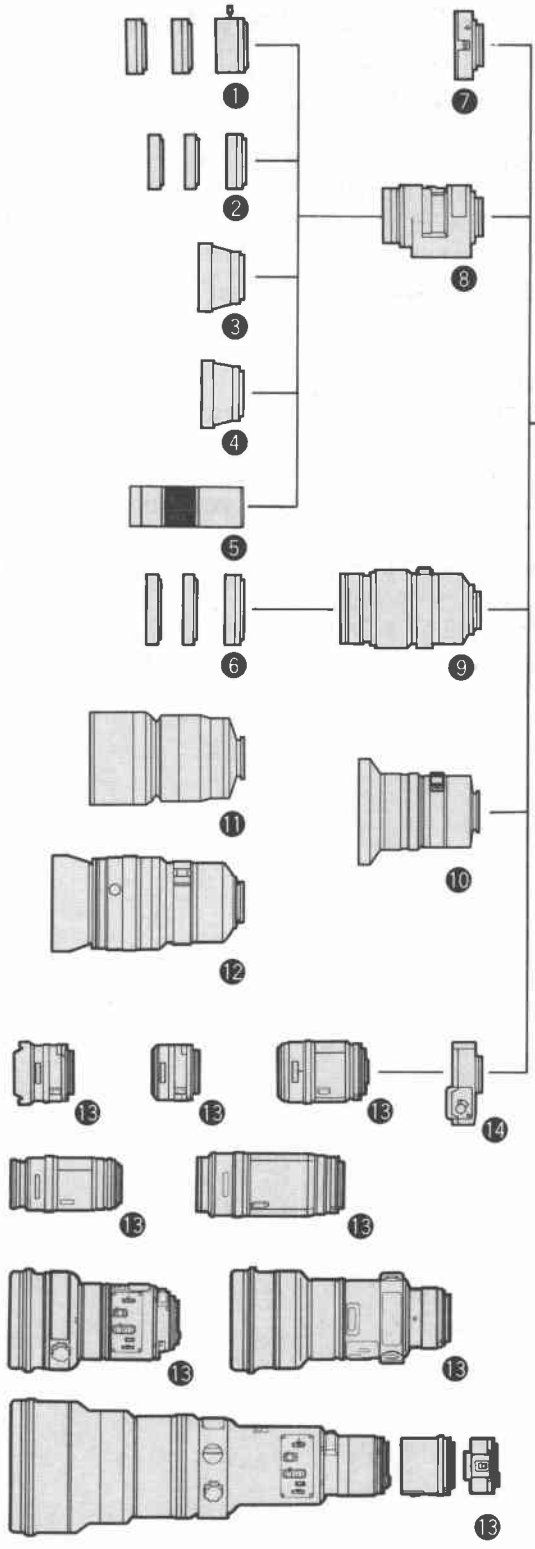
- The input picture can be monitored through the viewfinder.
- The camera automatically enters stop mode if it is left in record pause mode for 5 minutes.
- Press the REC MODE button during stop mode to place the camera in record pause mode.
- The video terminal cannot be used if the S-VIDEO terminal is already connected.
- If LINE MONO mode is selected, camera performs auto recording level adjustment automatically.
- Line-in mode is cancelled if the camera is turned off.

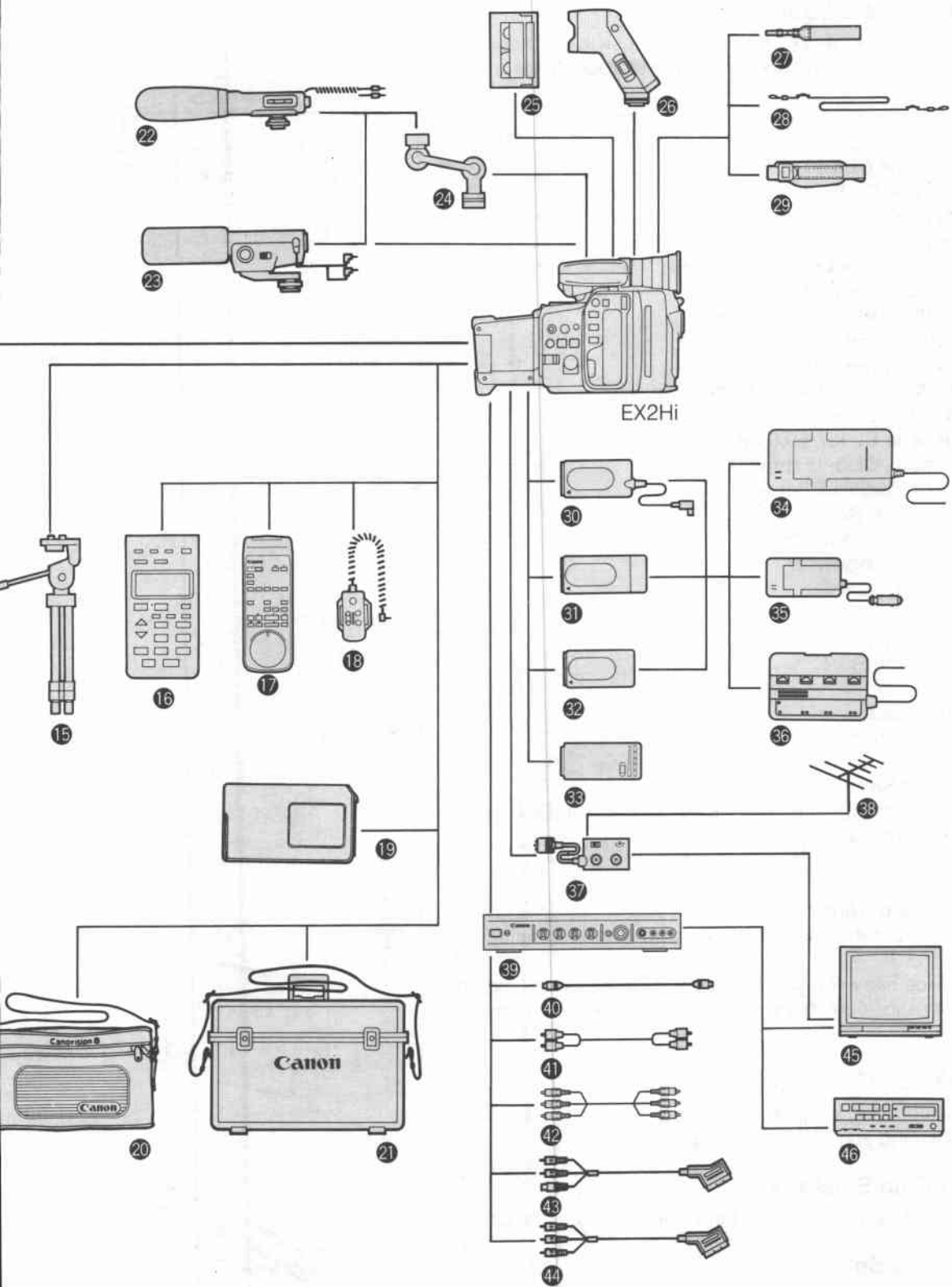
[5]



Video System Chart

❶ FS-55 Filter Set
❷ FS-55U Filter Set
❸ WD-55 Wide-converter
❹ TL-55 Tele-converter
❺ TL-55L3X Tele-converter
❻ FS-72U Filter Set
❼ Extender CL 2×
❽ Zoom Lens CL 8.7-69.6 mm f/1.4-1.8
❾ Zoom Lens CL 8-120 mm f/1.4-2.1
❿ Extra Wide-angle Lens
CL 5-15 mm f/1.6-2.6
⓫ Reflex Lens CL 250 mm f/4
⓬ Image-Stabilizing Zoom Lens
CL 10-100 mm f/1.8-2.8
⓭ EF Lenses
⓮ EOS Adapter VL
⓯ Tripod
⓰ VE-100 Video Editor
⓱ WL-1000 Wireless Controller
⓲ ZR-100 Zoom Remote Controller
⓳ RS-1000 Rain Shield
⓴ SC-E708 Soft Carrying Case
㉑ HC-1000 System Case
㉒ MM-200 Stereo Mixing Microphone
㉓ Stereo/Zoom Microphone
㉔ MB-100 Microphone Boom
㉕ 8mm Video Cassette
㉖ VL-20 Battery Video Light
㉗ WS-20 Wrist Strap
㉘ SS-200 Shoulder Strap
㉙ GB-100 Grip Belt
㉚ DC-100 DC Coupler
㉛ BP-E718 Battery Pack
㉜ BP-E722 Battery Pack
㉝ BP-E722D Battery Pack
㉞ CA-100 Compact Power Adapter
㉟ CB-110 Car Battery Adapter
㊱ MC-100 Multi-battery Charger
㊲ RU-100 RF Unit
㊳ Aerial
㊴ RGB-100 RGB Converter
(available in U.K. and Continental European countries)
㊵ S-150 S-video Cable
㊶ ST-150 Stereo Cable
㊷ STV-150 Stereo Video Cable
㊸ PC-270SST S-stereo SCART Cable
㊹ PC-170ST Stereo SCART Cable
㊺ TV
㊻ VCR




EX2Hi
Canon
Canon

Optional Accessories

HC-1000 System Case [1]

This solid, lockable case provides safe and stylish protection for the camera during transportation and storage. It has room for all the following:

❶ **EX2Hi**
❷ **Reflex Lens CL 250 mm f/4**
Zoom Lens CL 8-120 mm f/1.4-2.1
Zoom Lens CL 10-100 mm f/1.8-2.8
❸ **Cables**
❹ **CA-100 Compact Power Adapter**
❺ **DC-100 DC Coupler**
❻ **WL-1000 Wireless Controller**
❼ **RU-100 RF Unit**
❽ **BP-E718 Battery Pack**
❾ **BP-E722 and BP-E722D Battery Packs**
❿ **8mm Video Cassette**
⓫ **Zoom Lens CL 8.7-69.6 mm f/1.4-1.8**
Zoom Lens CL 5-15 mm f/1.6-2.6
⓬ **FS-55 or FS-55U Filter Set**
⓭ **FS-72U Filter Set**
⓮ **WD-55 Wide-converter**
⓯ **TL-55 Tele-converter**
⓰ **Extender CL 2×**

Ⓐ **Opening Case:**
To open, lift latches up.

Ⓑ **Closing Case:**
To close, press latches down.

Ⓒ **Attaching Shoulder Strap**
Attach shoulder strap to strap attachment bars, and adjust it to the most comfortable length.

Notes:
- Two keys are provided.
- Remove the battery pack from the camera before putting it away.
- Do not place heavy objects on top of the case, do not expose it to strong shocks, and do not leave it in areas of extreme heat.

SC-E708 Soft Carrying Case [2]

This lightweight bag keeps the camera within easy reach without weighing you down or getting in the way.

RS-1000 Rain Shield [3]

This vinyl cover protects the camera from light rain or mist.

GB-100 Grip Belt [4]

Provides an extra measure of protection for active shooting.

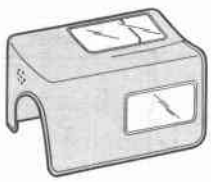
[1]



[2]



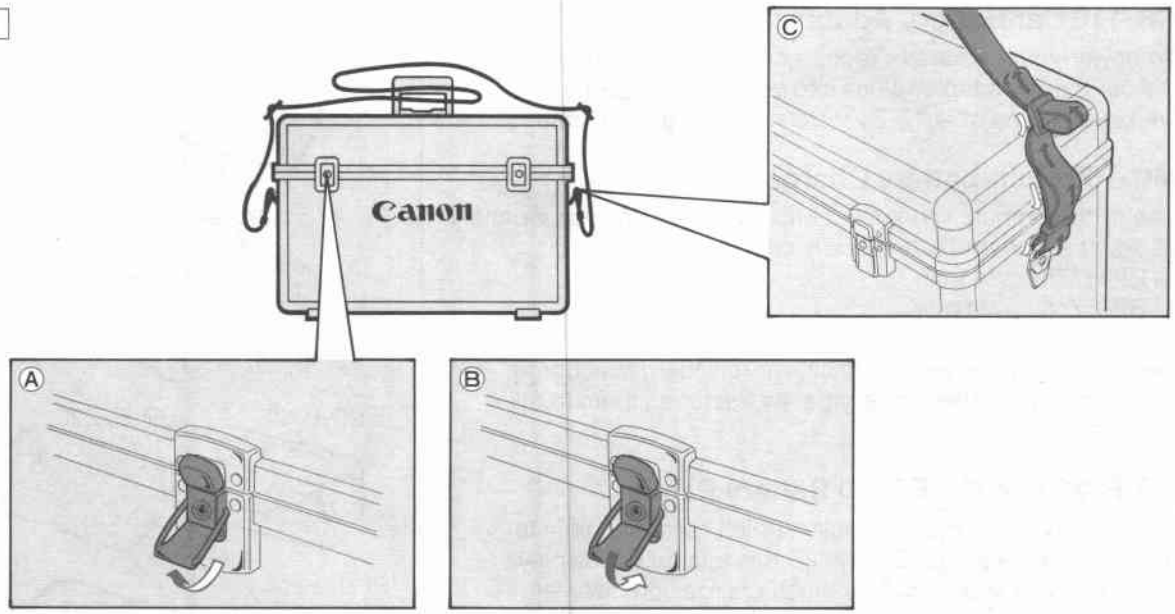
[3]

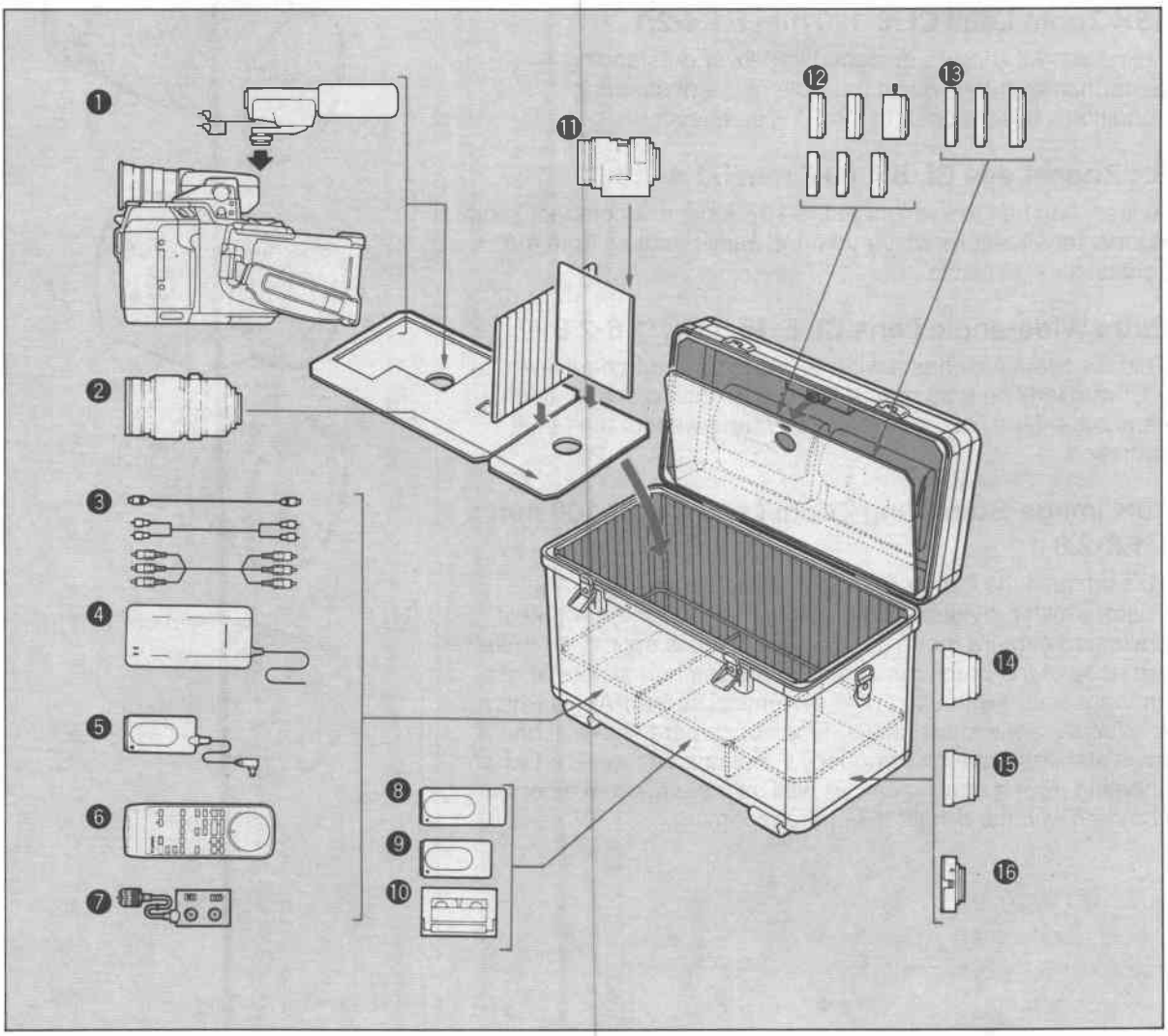


[4]



1





CB-110 Car Battery Adapter [5]

To power your camera or recharge battery packs on the move, the car battery adapter plugs into your car's cigarette lighter socket and runs off a 12-24 V DC negative ground battery.

MC-100 Multi-battery Charger [6]

The microcomputer-controlled MC-100 takes up to four battery packs at a time and dramatically cuts recharge times:

BP-E77K 45min.
BP-E718..... 80min.
BP-E722..... 90min.

It also performs an automatic charge/discharge/recharge cycle which refreshes battery packs, restoring them to full capacity.

BP-E722 and BP-E722D Battery Packs [7]

These heavy-duty battery packs stretch recording time to about 70 minutes. The BP-E722D has a five-LED display which lets you know just how much charge you have left.

15× Zoom Lens CL 8-120 mm f/1.4-2.1 [8]

This powerful zoom is designed to deliver outstanding performance in the widest possible range of shooting conditions. It is included in the EX2Hi Lens Kit.

8× Zoom Lens CL 8.7-69.6 mm f/1.4-1.8 [9]

At less than half the weight of the 15× lens, this compact zoom is ideal for situations which demand easy handling from the lightest lens available.

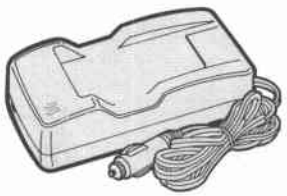
Extra Wide-angle Lens CL 5-15 mm f/1.6-2.6 [10]

This 3× zoom lens has a wide-angle focal length equivalent to a 27 mm lens on a 35 mm SLR — wider than a conventional camcorder lens plus wide-converter, and without the usual distortion.

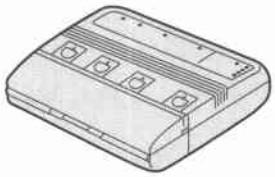
10× Image-Stabilizing Zoom Lens CL 10-100 mm f/1.8-2.8 [11]

This unique lens features Canon's revolutionary Vari-Angle Prism, which provides instant compensation for the slightest unwanted camera movement. Stabilization is optical, so there are none of the problems of resolution loss and picture angle changes found with electronic systems. The Vari-Angle Prism is effective against virtually all kinds of camera shake. It can even stabilize the high frequency vibrations encountered when shooting from a moving car, as well as the large movements common with hand-held telephoto recording.

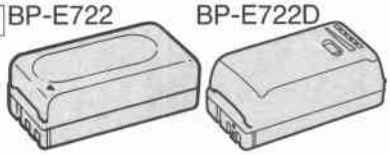
[5]



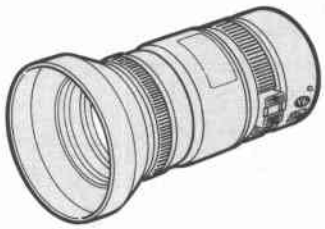
[6]



[7] BP-E722 BP-E722D



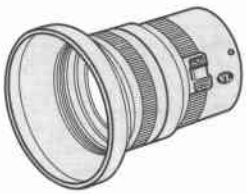
[8]



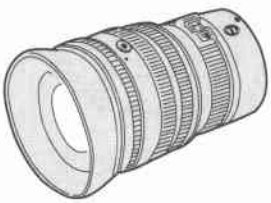
[9]



[10]



[11]



Reflex Lens CL 250 mm f/4 12

This manually-operated reflex lens is remarkably light and compact, yet delivers the same magnification as a 1,350 mm lens mounted on a 35 mm SLR. A bright f/4 aperture means clear telephoto images in a wide range of shooting conditions.

Extender CL 2× 13

This extender can be attached between a Canon VL lens and the EX2Hi to double the magnification of the lens.

EOS Adapter VL 14

This adapter allows Canon EOS lenses (EF lenses) to be attached to the EX2Hi. Because of the difference in size between 35 mm film and the EX2Hi's 1/2-inch CCD, the effective focal length of still camera lenses is multiplied by 5.4 times. A 600 mm lens, for example, is transformed into an incredible 3,240 mm supertelephoto.

- Consult your local service outlet to make sure there are no compatibility problems with your chosen lens.

TL-55 Tele-converter 15

(For Zoom Lens CL 8.7-69.6 mm f/1.4-1.8)
This tele-converter increases the lens's focal length by a factor of 1.4. The camera's zoom function can be used with this lens attached.

WD-55L3X Tele-converter 16

(For Zoom Lens CL 8.7-69.6 mm f/1.4-1.8)
Increases the focal length of the lens by a factor of 3.

WD-55 Wide-converter 17

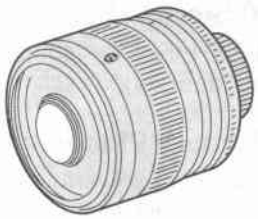
(For Zoom Lens CL 8.7-69.6 mm f/1.4-1.8)
This wide-converter decreases the lens's focal length by a factor of 0.7. The camera's zoom function can be used with this lens attached.

FS-55 Filter Set 18

(For Zoom Lens CL 8.7-69.6 mm f/1.4-1.8)
Three special effects filters to add a creative touch to your recordings: multiple-image 5×, R-cross 6× and zoom-spot.

FS-55U and FS-72U Filter Sets 19

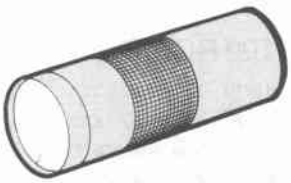
(FS-55U for Zoom Lens CL 8.7-69.6 mm f/1.4-1.8; FS-72U for remaining VL Mount lenses)
Ultraviolet, neutral density and circular polarising filters to help you take control of difficult lighting conditions.

12


13


14


15


16


17


18


19


MM-200 Stereo Mixing Microphone 20

The MM-200 mixes live sound and stereo music, so you can create the ideal soundtrack for your video productions.

VL-20 Battery Video Light 21

This compact yet powerful video light can be used for both indoor and outdoor shooting. There are no cables — a battery pack fits neatly inside.

MB-100 Microphone Boom 22

Provides a firm, flexible support for the microphone, so you can take full advantage of the sound quality and creative control it offers.

ZR-100 Zoom Remote Controller 23

When attached to the camera's LANC terminal, this controller allows the camera's zoom, start/stop and record search functions to be controlled without touching the camera itself.

- The ZR-100's record review button does not operate with the EX2Hi.

VE-100 Video Editor 24

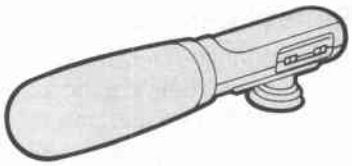
This easy-to-use editor controls the camera and a video recorder simultaneously for simple non-timecode editing. Not only does it link up to any LANC terminal, it can even 'learn' the remote control signals used by most VCRs.

RGB-100 RGB Converter 25

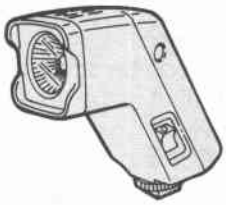
This converter allows you to convert an S-video signal into an RGB signal. Now you can enjoy superb Hi8 picture quality on a TV without an S-video terminal, if it is equipped with a SCART terminal that corresponds to an RGB signal.

- Available in Europe only.

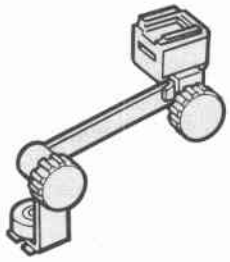
20



21



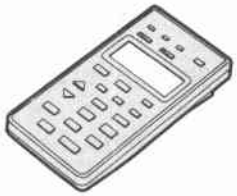
22



23



24



25



Problems and Troubleshooting

Use the following checklist for troubleshooting when you encounter problems with your camera. Consult your local dealer or service outlet if problems persist.
Make sure that all connections are secure when using this camera with other units.

Problem	Cause	Remedy
Camera does not turn on.	Battery pack charge is low.	Replace with fully charged battery pack.
	Power source is not properly connected.	Connect properly.
	Battery pack terminals are dirty.	Clean terminals with a soft cloth.
Camera turns off during operation.	Battery pack charge is low.	Replace with fully charged battery pack.
	Record pause mode has lasted for more than five minutes.	Turn camera on again.
Video cassette compartment does not open.	Battery pack charge is low.	Replace with fully charged battery pack.
OPERATE/CAUTION indicator flashes and "BATTERY" flashes in viewfinder.	Battery pack charge is low.	Replace with fully charged battery pack.
OPERATE/CAUTION indicator flashes and "DEW" flashes in viewfinder.	Condensation has formed inside unit.	See page 85 "Condensation (DEW)"
OPERATE/CAUTION indicator flashes and "EJECT" flashes in viewfinder.	Safety mechanism has been activated.	Unload and reload video cassette.
"DATE BATT" flashes in viewfinder.	Lithium battery is not inserted properly, or charge is low.	Insert battery properly, or replace with new battery (see p.10).
START/STOP button is pressed but recording does not start.	Camera is turned off.	Turn camera on.
	Video cassette is not loaded.	Load a video cassette.
	Tape has ended ("TAPE END" appears in viewfinder).	Rewind tape or load another video cassette.
	Erasure prevention switch is set to SAVE.	Set switch to REC (see p.17) or load another video cassette.
	Camera is in stop mode.	Press REC MODE button.
No picture appears in viewfinder.	Line-in mode is selected.	Press LINE OUT/IN button to select line-out mode.
	No lens is attached ("LENS" flashes in viewfinder).	Mount a lens.
	Lens is not mounted properly ("LENS" flashes in viewfinder).	Mount lens properly (see p.7).
	Lens cap is attached.	Remove lens cap.
Focus cannot be adjusted.	Dioptre is not properly adjusted.	Adjust dioptre (see p.15).
Wireless controller does not operate.	TALLY/SENSOR ON/OFF switch is set to OFF.	Set switch to ON.
	Batteries are not installed or their charge is low.	Install batteries or replace with new batteries.

Problem	Cause	Remedy
Playback does not start when PLAY button is pressed.	Camera is in record pause mode.	Press STOP button.
	Video cassette is not loaded.	Load a video cassette.
	Tape has ended. ("TAPE END" appears in viewfinder.)	Rewind tape or load another video cassette.
Tape is moving, but no picture appears on TV.	For TV without audio/video inputs: TV and/or RF unit is not set to video channel.	Set TV and RF unit to the appropriate channel.
	For TV with audio/video inputs: TV/VIDEO selector is set to TV.	Set TV/VIDEO selector to VIDEO.
	Faulty connection to TV.	Check all connections and cables.

Explanations:

Smear [1]

When you are recording in dark places, a bright light in the scene may cause a vertical bar to appear on the screen.

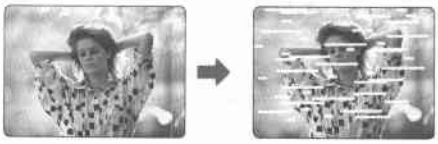
[1]



Rough Playback [2]

If your recordings do not play back smoothly, clean the video heads.

[2]



Cautions:

- Clean the video heads only when necessary, preferably using Canon's CK-E1 8mm Video Cleaning Kit.
- Do not use a 'wet-type' head cleaning cassette as this can cause damage.

Note:

- External interference may cause the camera's microprocessor to malfunction temporarily — if random letters appear in the viewfinder or if normal operation is interrupted, detach the power source and then reconnect it.

Condensation (DEW)

What is condensation?

Condensation or dew means tiny droplets of water which occasionally form on the camera surface when it is moved from a cold place to a warm place. Using the camera when dew is present may damage both the tape and the camera itself.

Preventing condensation

Remove video cassette and place the camera in a plastic bag prior to bringing it into a warm area where condensation is likely to occur. Wait until the camera reaches room temperature before removing it from the bag.

When condensation is detected 1

When condensation is detected in the camera, the OPERATE/CAUTION indicator flashes, the viewfinder and LCD dew displays flash, and the tape automatically stops. Remove the video cassette immediately, leave the video cassette compartment open, and turn the camera off. Leave the camera in a dry place until the condensation evaporates. Only the OPERATE button and EJECT switch will operate at this time.

- Sometimes, the dew displays may not appear in the viewfinder and LCD until 10-15 minutes after dew has formed.

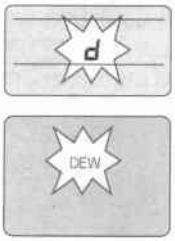
To start using camera again 2

Even when dew displays and OPERATE/CAUTION indicator no longer flash when the camera is turned on, wait at least one more hour before attempting to operate the camera. The time required for condensation to clear varies with surrounding conditions. It can be as long as one hour.

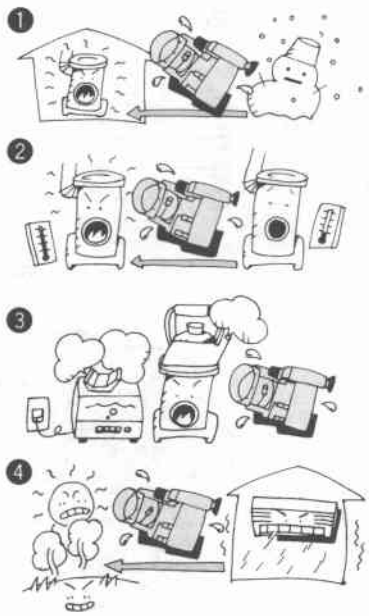
Condensation is likely to occur when:

1. Camera is brought from a cold place to a warm place.
2. A cold room is heated rapidly.
3. Camera is placed in a humid room.
4. Camera is taken from an air-conditioned room to a warm and humid place.

1

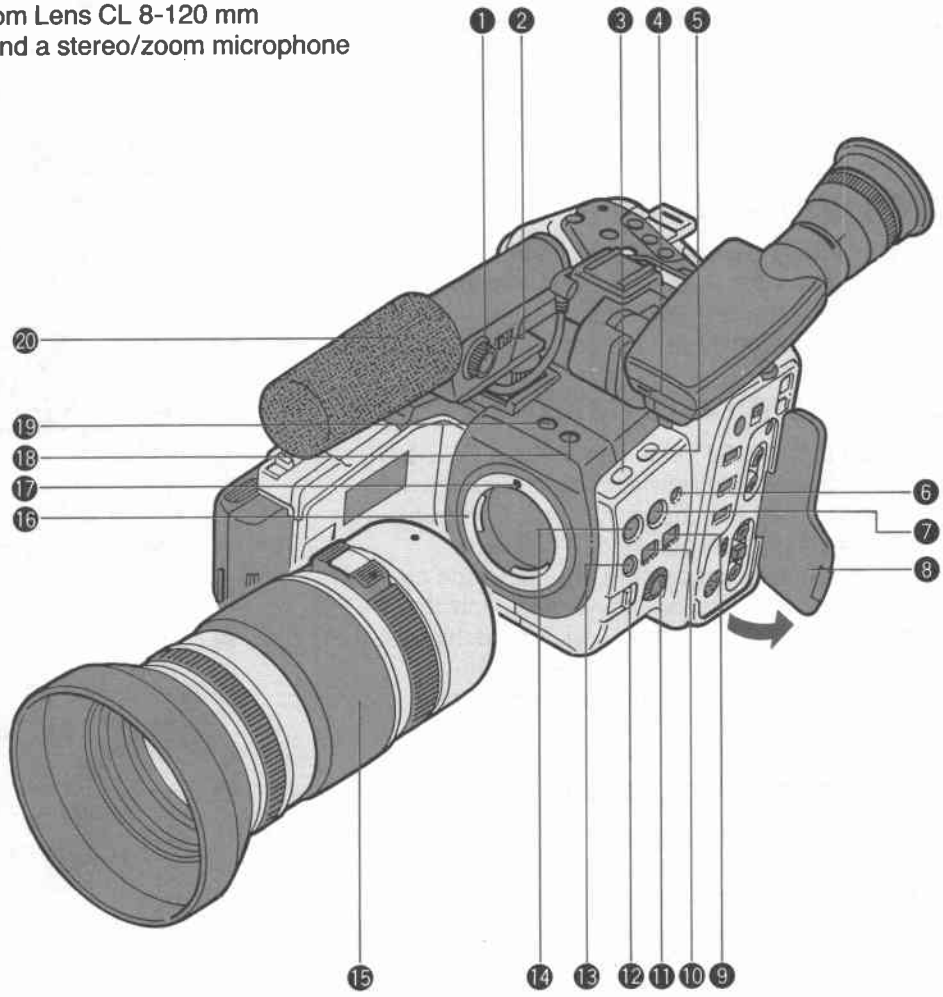


2



Nomenclature

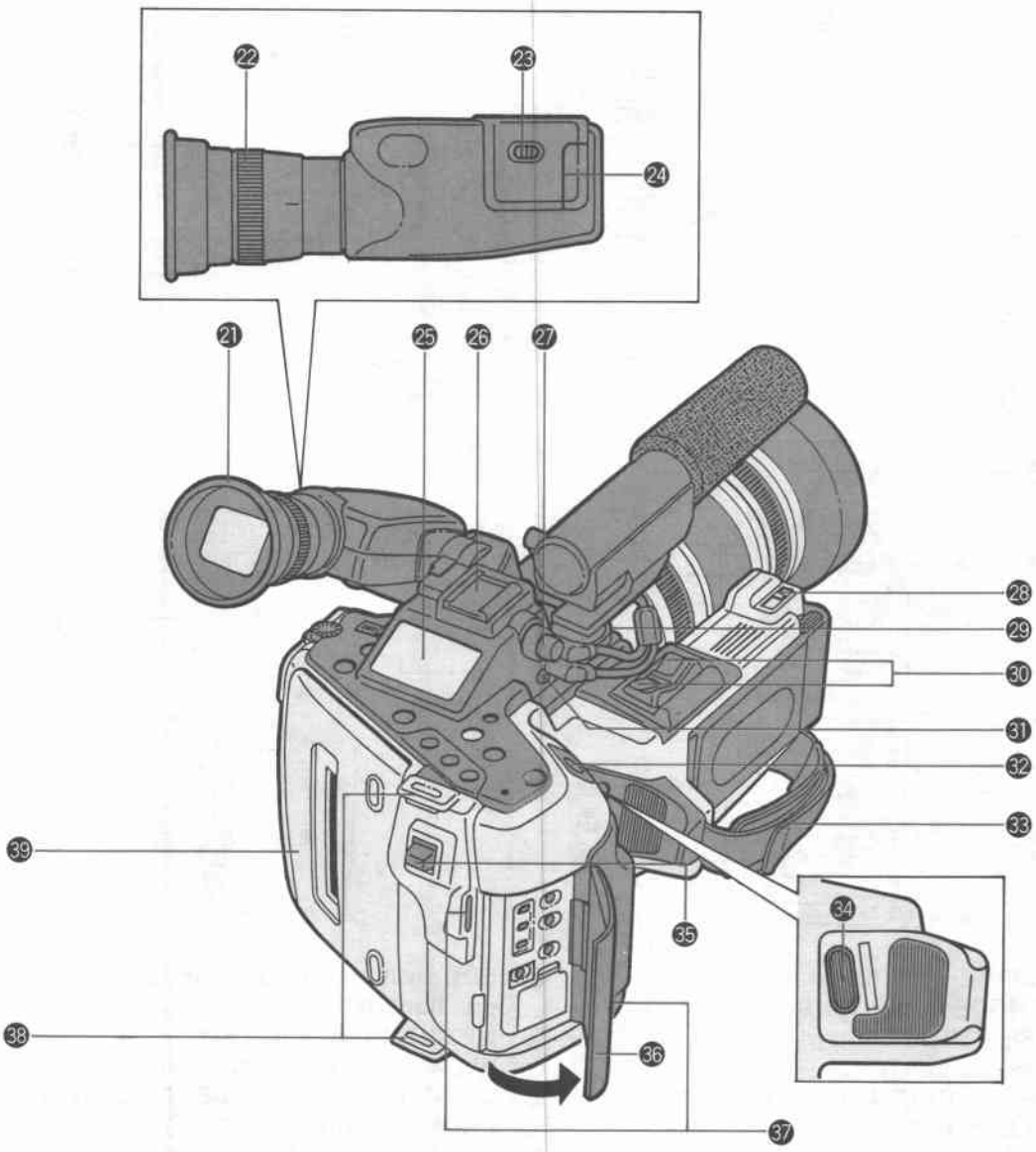
The illustration depicts a camera with a Canon Zoom Lens CL 8-120 mm f/1.4-2.1 and a stereo/zoom microphone attached.



1. **Stereo Angle/Zoom Sensitivity Controller (p.62)**
2. **STEREO/ZOOM Switch (p.6)**
3. **D.E. (Digital Effect) ON Button (p.51)**
4. **Tally Lamp**
5. **D.E. (Digital Effect) OFF Button (p.54)**
6. **FOCUS A/M Button (p.36)**
7. **AF MACRO/PUSH AF Button (p.36)**
8. **Audio/Video Compartment Cover**
9. **EXP A/M Button (p.44)**
10. **SHUTTER Button (p.47)**
11. **Exposure Controller (p.43)**
12. **LENS RELEASE Switch (p.7)**
13. **INDEX MARK Button (p.66)**
14. **FADE Button (p.56)**
15. **Zoom Lens CL 8-120 mm f/1.4-2.1 (p.80)**
16. **VL Lens Mount (p.7)**
17. **Red Dot (p.7)**
18. **DATE Button (p.59)**
19. **TITLE Button (p.57)**
20. **Stereo/Zoom Microphone (p.6)**

Tally Lamp

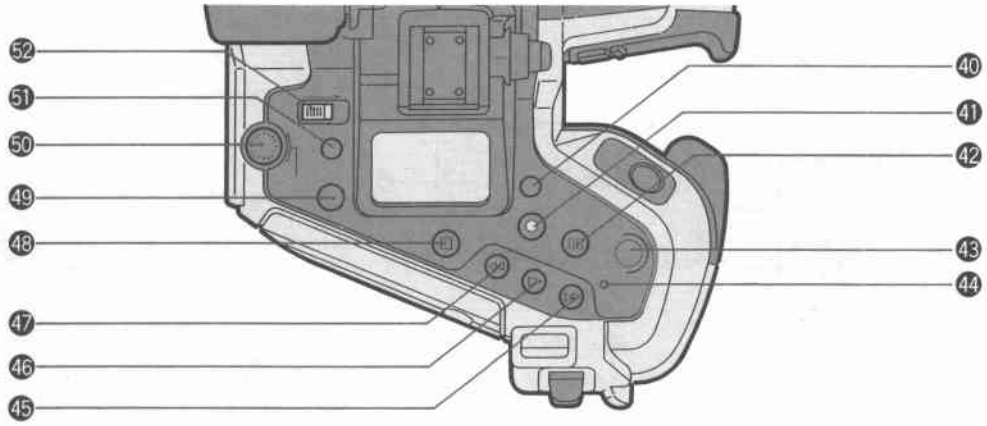
The tally lamp has the following functions:
Recording Rapid flash
Wireless controller operation.....Lights



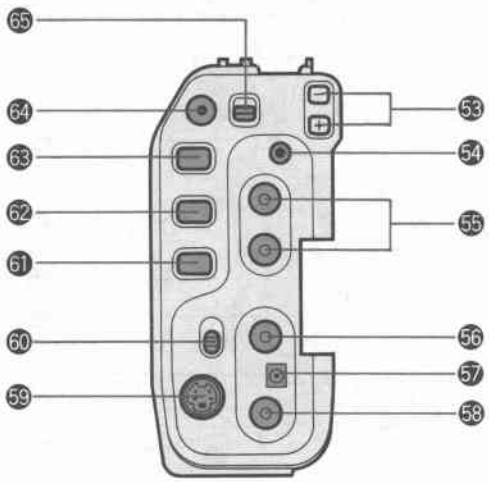
21 **Eyecup**
22 **Dioptre Adjustment Ring (p.15)**
23 **TALLY/SENSOR ON/OFF Switch (p.29)**
24 **Remote Sensor (p.22)**
25 **LCD Display (p.89)**
26 **Accessory Shoe (Upper)**
27 **REC LEVEL Controller (p.61)**
28 **BATT EJECT Switch (p.9)**
29 **Accessory Shoe (Lower)**
30 **Power Zoom Buttons (p.40)**
31 **ATT (Attenuator) Switch (p.61)**
32 **Start/Stop Button (p.18)**
33 **Side Grip Belt (p.15)**
34 **Start/Stop Button (p.18)**
35 **Power Zoom Lever (p.40)**
36 **Rear Compartment Cover**
37 **Grip Belt Attachment Bars (p.14)**
38 **Shoulder Strap Attachment Bars (p.14)**
39 **Video Cassette Compartment (p.16)**

TALLY/SENSOR ON/OFF Switch

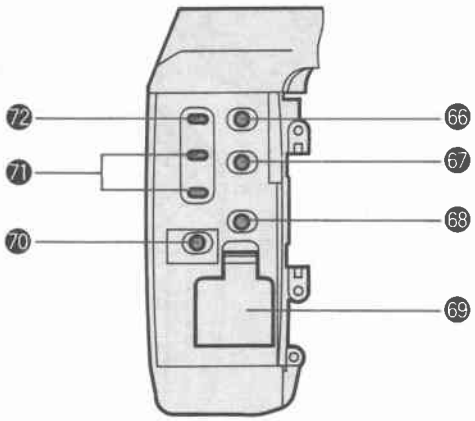
When this switch is set to OFF, the tally lamp will not flash. Set the switch to OFF when recording through glass windows or during macro recording. When the switch is set to OFF, the remote control sensor will not function.



A



B



40 MIC LEVEL A/M Button (p.61)
41 REC MODE Button (p.18)
42 PAUSE/STILL Button (p.74)
43 Operate Button (p.12)
44 OPERATE/CAUTION Indicator (p.12)
45 FF Button (p.29)
46 PLAY Button (p.29)
47 REW Button (p.29)
48 STOP Button (p.29)
49 TAPE RETURN Button (p.34)
50 PHONES LEVEL Controller (p.60)
51 C.RESET Button (p.34)
52 EJECT Switch (p.16)

A Audio/Video Compartment
53 REC SEARCH Buttons (+/−) (p.20)
(Record Review) Button (p.21)
54 REMOTE Terminal (p.60)
55 Stereo Audio Terminals (p.23)
56 Monaural Audio Terminal (p.23)
57 DC Out Terminal
58 Video Terminal (p.23)
59 S-VIDEO Terminal (p.23)

60 EDIT Switch (Normally, set to OFF position) (p.71)
61 METERING Button (p.42)
62 W.BAL (White Balance) Button (p.45)
63 D.E. (Digital Effect) SELECT Button (p.54)
64 PHONES Terminal (p.60)
65 CAMERA MODE Selector (p.18)

B Rear Compartment
66 TITLE/DATE Button (p.12)
67 COUNTER/TC Button (p.69)
68 LINE OUT/IN Button (p.74)
69 Lithium Battery Compartment (p.10)
70 SP/LP Button (p.18)
71 +/− Buttons (p.12)
72 SHIFT Button (p.12)

OPERATE/CAUTION Indicator

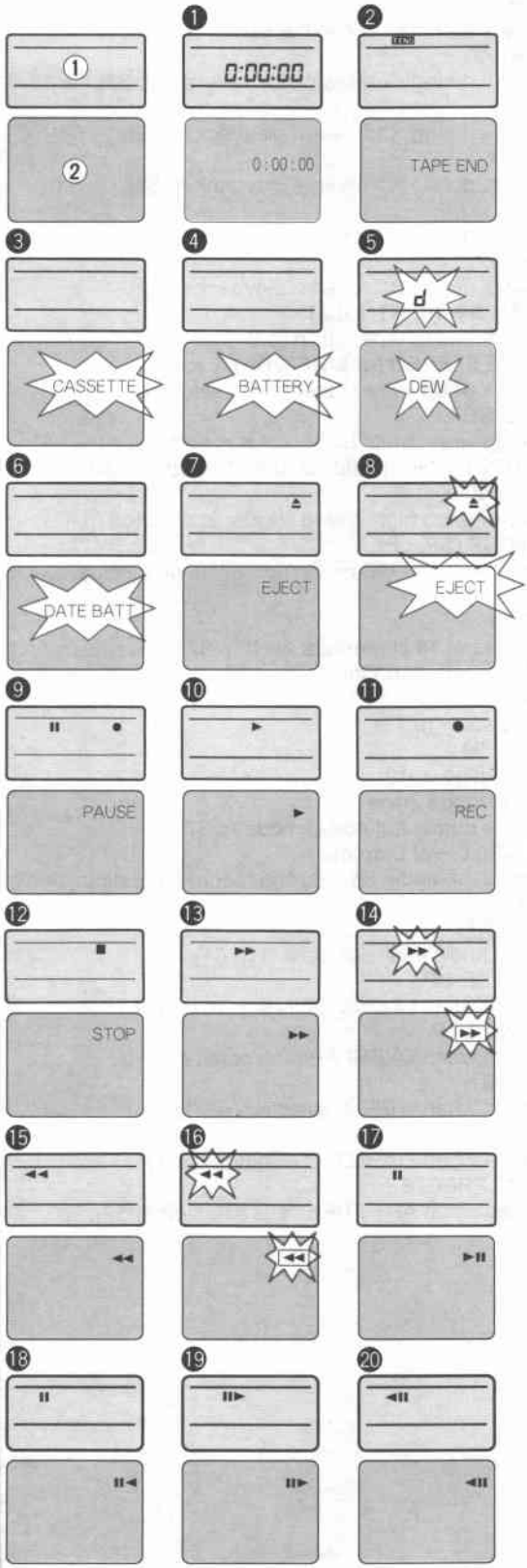
- This indicator lights when the camera is turned on. It flashes to warn that there is internal condensation or to indicate that the battery pack needs to be recharged.

Information Displays

The LCD and viewfinder provide information and warnings regarding the camera's operation.

- Press the ON SCREEN button on the wireless controller to view the viewfinder displays on a connected TV screen.
- Press the TITLE button to view the title on the TV, and press the DATE button to view the date. Only the title and auto date displays can be recorded with the scenes.

① **LCD Display**
② **Viewfinder Display**



❶ 0:00:00
Tape counter reading (-9:59:59 to 9:59:59).

❷ TAPE END
Appears when the tape is used up (full) (p.19).

❸ CASSETTE
Flashes when no video cassette is loaded (p.19).

❹ BATTERY
Flashes when the battery charge is nearly exhausted (p.9).

❺ DEW
Flashes when condensation (dew) is detected in the camera (p.85).

❻ DATE BATT
Flashes when the lithium battery charge is low, or no battery is inserted (p.10).

❼ EJECT
Appears when the eject function is operating (p.16).

❽ EJECT
Flashes when the safety mechanism is functioning (p.83).

❾ PAUSE
Appears when the camera is in record pause mode (p.29).

❿ ▶
Appears during playback mode (p.29).

⓫ REC
Appears during recording mode (p.29).

⓬ STOP
Appears during stop mode (p.29).

⓭ ▶▶
Appears during fast forward mode (p.29).

⓮ ▶▶
Appears during fast forward playback mode (▶▶ flashes in LCD display) (p.31).

⓯ ◀◀
Appears during rewind mode (p.29).

⓰ ◀◀
Appears during rewind playback mode (◀◀ flashes in LCD display) (p.31).

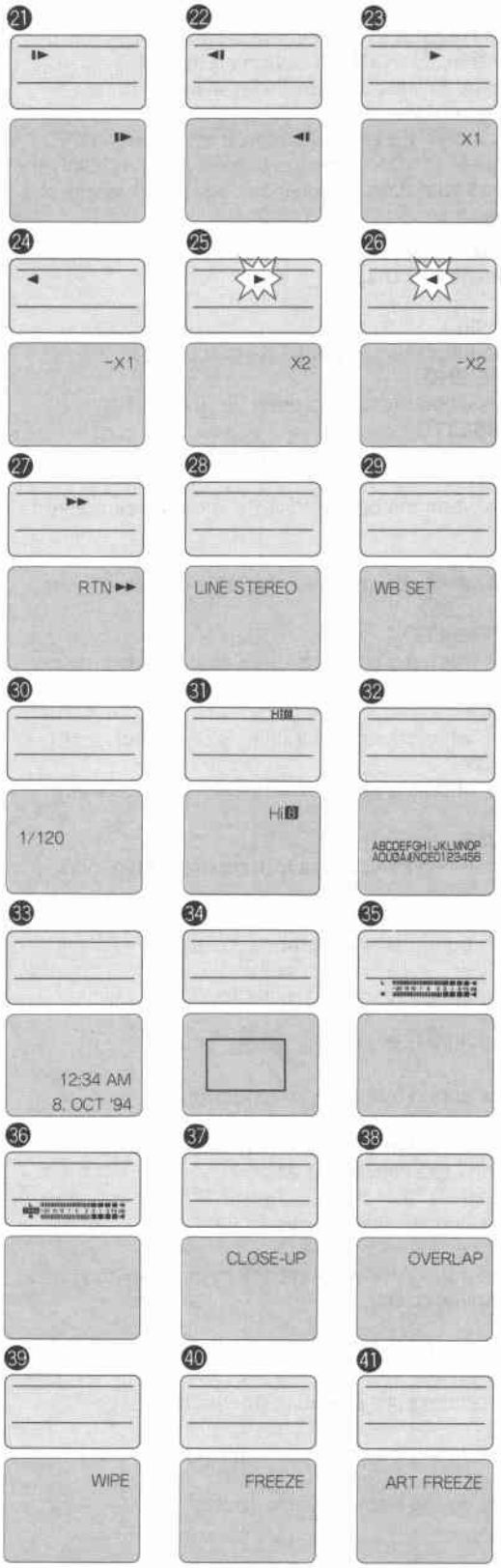
⓱ ▶II
Appears during still playback (forward).

⓲ II◀
Appears during still playback (reverse) (p.31).

⓳ II▶
Appears during frame advance (p.31).

⓴ ◀II
Appears during frame reverse (p.31).

㉑ **I►**
Appears during slow playback (forward) (p.32).
㉒ **◄I**
Appears during slow playback (reverse) (p.32).
㉓ **×1**
Appears during ×1 forward playback (p.32).
㉔ **−×1**
Appears during ×1 reverse playback (p.32).
㉕ **×2**
Appears during ×2 forward playback (p.32).
㉖ **−×2**
Appears during ×2 reverse playback (p.32).
㉗ **RTN ►► (or RTN ◄◄)**
Appears during tape return (p.34).
㉘ **LINE STEREO (or LINE MONO)**
Appears when line-in recording is selected (p.72).
㉙ **WB SET**
Appears when white balance set is being used (p.46).
㉚ **1/120 (1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000)**
Appears when high-speed shutter is selected (p.47).
㉛ **Hi8 SP (SP, LP)**
Tape speed and Hi8 mode/normal mode display (p.18).
㉜ **Title**
Two lines of 16 characters each (p.57).
㉝ **Auto Date and Time**
12:34 AM
Time display (p.12).
8. OCT '94
Date display (p.12).
㉞ **Autofocus Zone**
Appears during autofocus mode (p.37).
㉟ **Audio Level Display**
Displays the audio level during recording and playback (p.61).
㊱ **MANU**
Manual audio level adjustment (p.61).
㊲ **CLOSE-UP**
Appears when CLOSE-UP is selected (p.48).
㊳ **OVERLAP**
Appears when OVERLAP is selected (p.49).
㊴ **WIPE**
Appears when WIPE is selected (p.50).
㊵ **FREEZE**
Appears when FREEZE is selected (p.51)
㊶ **ART FREEZE**
Appears when ART FREEZE is selected (p.52).



㊷ SPLIT
Appears when SPLIT is selected (p.53).
㊸ CINEMA
Appears when CINEMA is selected (p.53).
㊹ S.SHUTTER
Flashes when SLOW SHUTTER is selected (p.48).
㊺ <S.SHUTTER>
Flashes when SLOW SHUTTER is selected in high-speed shutter mode (p.48).
㊻ 1/25 (1/12, 1/8, 1/6)
Indicates selected slow shutter speed (p.48).
㊼ LENS
Flashes when no lens is attached to the camera (p.7).
㊽ Exposure Meter
Appears when manual exposure control is selected (p.44).
㊾ +0.5
Appears when AE level control is selected (p.43).
㊿ PEAK
Appears when peak metering is selected (p.42).
(51) Data Code Display
12:34:15 AM
Time display (p.63)
8. OCT '94
Date display (p.63)
--- -- ---
No data code display (p.63).
(52) DATE 00 SCAN (00 to 99)
Appears during date scan (p.64).
(53) DATE 01 SEARCH (01 to 99)
Appears during date search (p.65).
(54) INDEX 00 SCAN (00 to 90)
Appears during index scan (p.67).
(55) INDEX 01 SEARCH (01 to 99)
Appears during index search (p.67).
(56) INDEX MARK
"MARK" flashes then appears steadily when an index signal is marked on the tape (p.66).
(57) INDEX ERASE
Appears when an index signal is erased (p.68).
(58) 0:00:00:00 (0:00:00:00 to 9:54:59:29)
RC Time Code display (p.69).
(59) –:--:--:--
No time code display (p.69).
(60) TC INSERT
"INSERT" flashes then appears steadily when time code is added to a recorded cassette (p.70).
(61) SLOW TRACKING
Appears during slow tracking adjustment (p.33).
(62) STILL TRACKING
Appears during still tracking adjustment (p.33).



Specifications

EX2Hi

Power supply (rated)	6 V DC
Power consumption	8.8 W during recording in auto mode (not using power zoom)
Television system	CCIR standard (625 lines, 50 fields) PAL colour signal
Video recording system	2 rotary heads, helical scanning system; Luminance signal: FM azimuth recording; Colour signal: Converted subcarrier phase shift recording (8mm video standard)
Audio recording system	Frequency multiplexing with the video signal by 2 rotary heads (2 channels)
Image sensor	½-inch CCD (charge-coupled device) 470,000 pixels (440,000 effective pixels)
Lens mount	VL Mount
Tape format	8mm, metal evaporated/metal particle
Tape speed	20.051 mm/s (SP) 10.026 mm/s (LP)
Maximum recording time	3 hours with P5-90 video cassette in LP mode
Focusing system	TTL autofocus (piezo), manual focusing possible
Minimum illumination (using lens with f-stop of 1.4)	0.5 lux using SLOW SHUTTER (1/6th second)
Electronic viewfinder	0.7-inch monochrome CRT
Microphone	Electret condenser microphone (stereo/monaural selectable)
Input level	Video:
Output level	1 Vp-p/75 ohms, unbalanced (video output terminal); 1 Vp-p (Y signal)/0.286 Vp-p (C signal) (S-video terminal); Audio: −10 dBV/more than 47 kohms, unbalanced (audio terminal/stereo audio terminals); −64 dBV/600 ohms, unbalanced (external mic)
Output level	Video: 1 Vp-p/75 ohms, unbalanced (video output terminal); 1 Vp-p (Y signal)/0.286 Vp-p (C signal) (S-video output terminal); Audio: −10 dBV/less than 3 kohms, unbalanced (audio output terminal/stereo audio output terminals)
Dimensions (Width × Depth × Height)	170 × 237 × 165 mm
Weight	1.4 kg without battery pack and lens

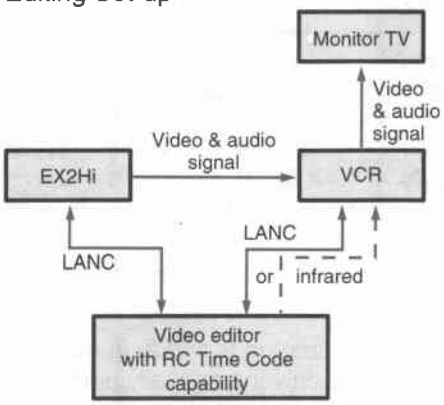
Weight and dimensions are approximate.
Errors and omissions excepted.
Subject to change without notice.

Technical Information

RC Time Code

The video picture is composed of a series of still images, called frames, which appear on the screen at a rate of 25 per second, giving the effect of continuous motion. In order to edit accurately, it is necessary to have a way of identifying each of these frames — this is the purpose of time code. During recording, the EX2Hi automatically adds Rewritable Consumer Time Code to the tape, marking each frame with the hour, minute, second and frame number. The time code can also be added to prerecorded cassettes, and it is copied from one tape to another during editing. During playback, you can display the time code on screen in order to locate each frame precisely.

Editing Set-up

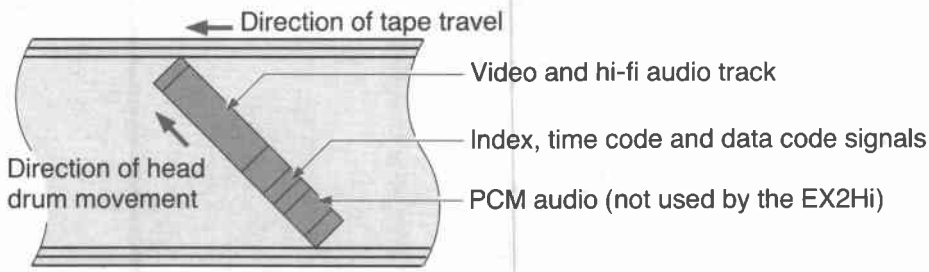


Note:

•RC Time Code is not compatible with the 8mm time code intended for institutional use.

Data Code

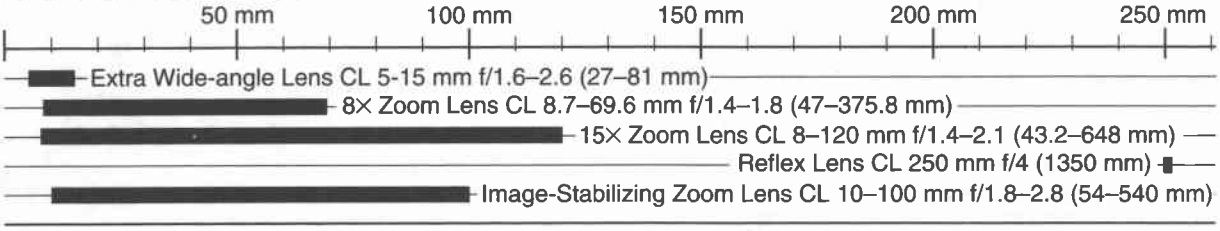
The data code indicates the year, month, date, hour, minute and second when a recording was made. Unlike the conventional date and time display which can be permanently superimposed on the recorded picture, the data code is automatically added to the tape, on a separate track from the audio and video signals. It can be displayed as desired during playback, and is also used to locate recordings by date scan and date search.



VL Lenses

A variety of lenses have been designed for the VL Mount System used by the EX2Hi. As the table shows, they cover a wide range of focal lengths, providing the ideal lens for virtually every shooting situation. The equivalent focal lengths for 35mm still cameras are shown in brackets. (They are calculated by multiplying the focal length of the VL lens by 5.4.)

Focal lengths of VL Lenses



EF Lenses

The EOS Adapter VL allows the EX2Hi to use Canon EF Lenses. Autofocus and auto iris functions are maintained, and there is no change in lens aperture. Moreover, as only the optically perfect central portion of the lens is used, definition is uniformly high right up to the edges of the picture. Flare and ghosts are kept to a minimum, for high-contrast, high-quality images.
Because of the difference in size between 35 mm film and the EX2Hi's 1/2-inch CCD, the focal length of EF lenses is multiplied by 5.4 when used with the EX2Hi. For example, the EF 75-300 mm f/4-5.6 has an effective focal length of 405-1620 mm.

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